

LEARNING AS DEVELOPMENT: REFLECTIONS OF FORMER MONTESSORI
STUDENTS

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By

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Abstract

Learning as Development: The Reflections of Former Montessori Students

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Possible long term effects of previous Montessori education on college age students are relatively unexamined. In this descriptive, exploratory, qualitative study, 13 students who had earlier attended Montessori schools for at least six years were asked to reflect on their just-completed freshman year. Thematic analysis of their in-depth, semi-structured interviews revealed similarities in how they experienced themselves as learners; understood the construction of knowledge, opinion, and truth; experienced themselves as growing and changing; and viewed the influence of their Montessori education. Though their level of epistemological maturity was not measured directly, their responses suggested a more advanced level than usually achieved by comparably aged college students. Their patterns of response also correspond to characteristics Montessori described as the fourth plane of development, which would be achieved by adolescents whose earlier educational experiences had successfully brought them through the first three planes. These findings suggest that further research is needed into the possible long term effects of a Montessori education on individuals as they reach adulthood. Although altering current educational models would be enormously challenging, further examination of this alternative is recommended.

Dedication

The effort represented by this dissertation is dedicated to the unique potential within each and every child and the individuals committed to working in service of its full emergence and fulfillment through their Montessori practice.

The following individuals are also gratefully acknowledged:

- My grandchildren, children and husband for graciously (for the most part) enduring my absences, exhaustion, and preoccupation and loving me anyway.
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Chapter I: Introduction to the Study

In this world of exponentially increasing complexity and connectivity, it becomes more and more difficult to foresee the possible consequences of the educational choices we make and the actions we take. How to best assist students in acquiring the kinds of skills and understandings that will support them as they develop into the citizens of tomorrow has become a focus of many thinkers and educators. “At the start of the third millennium,” Howard Gardner (2008) states, “we live at a time of vast changes – changes seemingly so epochal that they may well dwarf those experienced in earlier years...these changes call for new educational forms and processes” (p. 11). The question is, what are these new forms and processes, and how should they be implemented?

Senge and others (Senge et al., 2000), suggest that it is necessary to build schools that learn, because it is no longer possible to predict what “civilization and culture will be like in eighteen years” (p. 10). They propose that utilizing a systems perspective, and understanding the relationships between the nested systems of classrooms, schools, and communities, may be a way of clarifying the vision of educators. This might help them better embody the understanding that learning/knowledge is contextual, that fields of knowledge and learners are intimately connected and interrelated, and that “all learners construct knowledge from an inner scaffolding of their individual and social experiences, emotions, will, aptitudes, beliefs, values, self-awareness, purpose and more” (p. 21). Darling-Hammond (2010, p. 33) posits that we will need systemic, sustained national policy changes in order to create and maintain such major changes in the current school system, whereas Pearlman (2010) focuses on the need to design new learning environments, which better support project-based learning.

Gardner (2008) posits that we need to literally change our minds if we are to flourish in the future, so that we develop and utilize five different ways of thinking, which he identifies as the disciplined mind, the synthesizing mind, the creating mind, the respectful mind, and the ethical mind. He believes these capacities are innately inherent in humans, but emerge in a developmental sequence (p.161). In a similar vein, Pink (2005) sees us as entering the “conceptual age,” a time in which we need to develop what he calls six “essential aptitudes” or “senses” which he labels “design, story, symphony, empathy, play, and meaning” (pp. 65-67); Costa and Bena (2008) suggest that learners in the 21st century need to develop specific “habits of mind” which will prepare them for the level of complexity, communication, and continuous learning they will encounter in life and in the workplace. These skills include “creativity and innovation; critical thinking and problem solving; communication and collaboration; flexibility and adaptability; initiative and self-direction; social and cross-cultural skills; productivity and accountability; and leadership and responsibility” (p. xxiii). Such skills or habits of mind are descriptive of mature thinking, as defined in this study.

While the development of these capacities and skills--or ways of thinking, learning, and creating knowledge--may indeed be part of what is necessary to improve future educational outcomes, Kegan (1994), Hall (2006), and Korten (2006) observe that many adults are not sufficiently evolved to accomplish this kind of thought and behavior, even if schools change their structure as well as what and how they teach. These constructive developmentalists see individuals as participating in an ongoing process of growth in consciousness. Kegan (1994), in particular, posits that most of us have not yet created “the order of consciousness the modern world demands” (p. 287). If this is the case, ways of supporting epistemological development--that is, promoting a broader awareness of the nature and justification of human knowledge--may

be an important step towards fostering a more mature perspective. This struggle to assist young people in their developmental process towards mature thinking and reasoning could be one of the overarching challenges of 21st century education.

A significant number of leaders, educators, and much of the general population have concluded that many of our public schools are in serious need of reform (Lillard, 2005, pp. 4-5). Bellanca and Brandt (2010) state that “The world is changing...U.S. schools and students have not adapted to the changing world” (pp. xvii-xix). Korton (2006), Stone (2002), and others fear that our schools are more concerned with testing, maintaining the status quo, and socializing students to obey authority than they are with focusing on assisting our youth in acquiring 21st century skills. The U.S. education system may therefore be failing to provide environments which nurture and support the traits and qualities of mature thinking. Nor do they provide the depth of learning and breadth of understanding necessary to have a well-informed, epistemologically mature, critically thinking population. Knefelkamp reinforces this perspective in her introduction to Perry’s seminal work on the epistemological development of students during the college years where she states that “many (perhaps even most) students are educated in environments that Freire would characterize as ‘banking models’ with their emphasis on authority, information exchange, and the quest for right answers” (Perry, 1999, p. xvi, originally published 1970).

Given the developmental/epistemological implications associated with the increasingly complex demands of the 21st century, it is useful to look more closely at educational approaches that claim to provide developmentally supportive environments, which Kegan (1982, 1994) refers to as *holding environments*. Epistemology, in this context, refers to our beliefs about knowledge and knowing, and how they relate to learning. A more mature, complex

understanding about knowledge and knowing may allow for more creative, insightful, empathetic, and effective problem solving.

According to Kegan, *holding environments* provide the support, challenge, and continuity that nurture transformational learning and increasing complexity in perspective (Drago-Severson, 2004, p. 17). As Hofer and Pintrich (2002) point out, “the adequacy of our epistemological theories will in some way determine what and how we make meaning of the information we encounter” (p. 3), and the choices we make based on how we interpret that information.

To understand the context of this study, it is necessary to take a look at how thought has evolved around the concept that our epistemological perspectives influence how and what we learn, which is explored in this chapter. The problem statement, purpose, research question, approach, significance, theoretical framework, assumptions, limitations and delimitations, and definition of terms of this study are also discussed.

Background

“Beliefs about knowledge and knowing have a powerful influence on learning, and deepening our understanding of this process can enhance teaching effectiveness” (Hofer, 2002, p. 13). The more thoroughly educators understand how perspective, or “world view,” influences one’s choices and meaning-making, the more effective they are likely to be in fostering growth and development. According to Sanford (1967, p. 9), an education that focused on individual development would be specifically designed to “promote an identity based in such qualities as flexibility, creativity, openness to experience, and responsibility,” in which “complexity and wholeness are the marks of the highly developed [person]” (p. 7). For both Sanford and Perry, “true education...was fundamentally about...the evolution of individuals’ thinking structures and meaning-making towards greater and more adaptive complexity” (Moore, 2002, p. 26)..

Based on his epochal longitudinal study of college students, Perry (1999) described a developmental process that revealed significant, progressive, qualitative changes in how learners perceive and approach their learning. As a result, he espoused developmental instruction, that is, providing education which promoted epistemological growth and change. Several other researchers (Baxter Magolda, 1992; Belenky, Clinchy, Goldberger, & Tarule, 1986; King & Kitchener, 1994; Kuhn, 1991), were influenced by Perry's work and expanded on his findings with regard to gender-related issues, how epistemological perspectives continue to develop into adulthood, and the role of reflection, among other foci.

Perry's (1970) developmental perspective on epistemology in the college years dovetails with Kegan's (1982) constructivist-developmental perspective on the life-long process of human development. First and foremost, constructive-developmentalists purport that the human being is more verb than noun, more process than entity--a process that is constantly in flux and evolving--and this process is focused on making meaning. Piaget, who considered himself a *cognitive*-developmental theorist, was also a student of the Montessori Method and president of the Swiss Montessori Society. He described the process of meaning-making as follows: "Knowledge is constructed by the individual through her acts, through her interaction with environment, by means of the complementary adaptive mechanisms of accommodation and assimilation. In this process, progressively more advanced levels of knowledge evolve" (Marton & Booth, 1997, pp. 6-7). Kegan (1982), however, considers Piaget as a *constructive*-developmentalist, because the "notion of development as a sequence of internalizations...is quite consistent with the Piagetian concept of growth" (p.31).

Constructive-developmentalists theorize that human consciousness is constantly evolving, driven by a process of differentiating from the larger environment and then

reconnecting with it in new, more complex ways. Thus, it is necessary to have sufficient distance to allow for reflection before an individual can develop a larger perspective; “*differentiation always precedes integration*” (Kegan, 1994, p. 326, original italics). The natural path of a person is to evolve her consciousness through a process of refining her perceptions of self and other to levels of greater complexity and objectivity. This process occurs through the repeated interaction between the person and her environment. The information gathered from the interactions then will either be integrated into the person’s existing meaning making process (accommodation) or the person’s meaning making process will be changed to be able to include the new information (adaptation). Through this process of repeated accommodation and adaptation of experientially encountered information, the two components of constructive-development, construction and development, work hand in hand to allow for the evolution of consciousness and transformational learning. “Learning occurs as people make sense of the world through connecting new ideas with their existing understanding of the world in a process of constant revision” (Baxter Magolda, Creamer, & Meszaros, 2010, p. 5).

Learning and meaning-making are developmental processes that take place as the individual interacts with the environment and reflects on the results of that interaction, which changes how the individual perceives both self and environment. So, the individual innately develops, but also plays an active part in the creation of the self she is in the process of becoming through the interactions she has and the meaning she makes throughout this developmental process. “Learning and growth are the products of the *transformation* of the underlying meaning-making structure rather than the accumulation of knowledge, skills, and *information*” (Baxter Magolda et al. 2010, p. 5). *Growth*, from the constructive-developmental perspective, indicates the process of increasing epistemological maturity (Kegan, 1982; Baxter-Magolda, et al., 2010).

It involves going through successive phases of transformation during which we “emerge from the self [we] have been” (Kegan, 1982, p. 148). Each successive stage encompasses the prior stage and moves beyond it to a new, qualitatively more complex, level of perception. As noted earlier, Kegan (1982) also proposes that movement between stages of epistemological maturity can be fostered through a “holding environment” that provides an appropriate balance of support, challenge, and consistency.

Montessori also emphasized the importance of what she characterized as the *prepared environment* as essential to an education that would support the “psychical phenomena of growth” (Montessori, 1965, p. 37). She, too, posited the need for an environment developmentally suited to foster growth of individuals as they pass through specific developmental stages (Gordon, 1993).

The system of education developed by Maria Montessori in 1908 has been in existence for over one hundred years and has served hundreds of thousands of children, internationally. Its goal is to provide individuals with a life-long love of learning and an understanding of self and purpose in service to the whole community, thus evolving humanity towards a more peaceful way of interacting amongst themselves and in relationship with the world (Thrush, 1975). It is “a social and emotional environment where children [are] respected and empowered as human beings” (Selden & Epstein, 2003, p. 26). In *Education for a New World*, Montessori (1946) focused on the importance of nurturing each child’s capacities: “Education should no longer be mostly imparting of knowledge, but must take a new path, seeking the release of human potentials” (p. 2). She also developed a theory of developmental phases or stages through which human beings evolve as they grow, which she called *planes of development* (Grazzini, 1996), elements of which correspond to both Piaget’s and Kegan’s frameworks for development.

Because of this, Maria Montessori has been retrospectively identified by some as one of the first of the constructive-developmentalists (Meadows, 1998).

The kinds of abilities and perspectives her method fosters are now seen as aligned with modern theorists, including Kegan (1994) and Korten (2006), who emphasize the importance of such development for successful functioning in the rapidly changing world of the 21st century. As Lillard (2005) commented, “Modern research in psychology suggests the Montessori system is much more suited to how children learn and develop than the traditional system is” (p. 3). Lide (2012) notes specifically that traditional educational systems model a mechanistic world view, which includes “linearity, hierarchy, reductionism, objectivity, outcomes, and empiricism” (p. 1), whereas the Montessori model focuses on characteristics that support a more emancipatory and participatory worldview. These include “non-linearity, interdependence, process, relationship, and ecology” (p. 1). It is important to emphasize that Montessori’s model of educating the “whole child” is not limited to cognitive development, but includes development of the capacities needed to participate fully and effectively in an increasingly complex world.

Whitescarver and Cossentino (2008) mention “the profusion of recent scientific research confirming the validity of Montessori’s claims about children and education” (p. 2590), yet they also point out that up until recently, “only a handful of studies conducted by scholars” were completed, and that between 2000 and 2005, only 36 studies were completed in the United States. Eighty three more have been undertaken between 2010 and 2013, (Bagby, Wells, Edmondson, & Thompson, 2014), signaling increased interest in Montessori-focused research. However, none of these look specifically at former Montessori students beyond primary school. It may therefore be instructive to explore what effects early Montessori schooling may have as young people mature.

Problem Statement

Recent research by Lillard and Else-Quest (2006) has indicated higher levels of emotional and social maturity in Montessori elementary students as compared to similar students in traditional settings. Lillard's (2012) most recent study further found that children in classic Montessori programs outperform those in programs with some Montessori included, as well as those in traditional programs. Additional studies concerning the Montessori method cited in literature reviews by Bagby (2007), Bagby and Jones (2010), and Bagby, Wells, Edmondson, & Thompson (2014) explored other aspects of the effect of the Montessori method when utilized with young children, individuals with disabilities, and the elderly, but there appears to be very little information in the literature that explores the thinking of individuals who previously participated in Montessori programs as they begin the college years.

Purpose

This descriptive, exploratory, qualitative study examined how students whose early education was primarily in Montessori schools described their experiences of their first years of college: The aim of this research was to discover how former Montessori students perceive their first years of college, how they view themselves and their learning, and what criteria they use to make difficult choices.

Research Question

The research question is: *How do undergraduate college students who were educated according to the Montessori Method during their early years, most of whom are completing their freshman year, describe their experiences at college?* The subquestions focused on:

1. How do these students view themselves as learners?
2. What type of learning environment do they prefer?

3. What criteria do they use to make difficult decisions?
4. What meaning do they make of the possible influence of their prior Montessori experience?

Approach

This constructivist study was undertaken using a basic, interpretive, qualitative approach. Constructivist research is based on the premise that people construct what they perceive as reality. “Because human beings have evolved the capacity to interpret and construct reality...the world of human perception...is ‘made up’ and shaped by cultural and linguistic constructs” (Patton, 2002, p. 96). Constructivist research explores differing perceptions and acknowledges the influences of internal and external contexts. Because “constructivists study the multiple realities constructed by people and the implication of those constructions for their lives and interactions with others” (p.96), it is appropriate for a study exploring how former Montessori students perceive and understand their former and current experiences. The semi-structured interview used in this study is an appropriate instrument for such exploration.

Purposefully selected through the “snowball” approach (Patton, 2002, p. 237), quantitative instrument, Moore’s (1989) Learning Environment Preferences survey (LEP), was initially administered to this group, with the intention of identifying at least ten “data rich” participants to be interviewed who were relatively epistemologically mature. Participants in this study were current undergraduate students, most of whom were completing their freshman year, who had at least six years of early Montessori schooling prior to entering college. 28 students responded to the snowball outreach and completed the LEP, but only 13 were able to participate in the extended interviews, so the LEP data was not utilized in this study. It is however included

in Appendix E. The interviews were transcribed and analyzed utilizing thematic analysis as described by Braun and Clarke (2006).

Significance

This study provides information about former Montessori students' views of themselves and their learning and suggests areas for further research into the epistemological ramifications of developmentally appropriate prepared environments. It also highlights specific educational techniques, processes, and perspectives which may foster the development of epistemological maturity, as identified by the participants. It suggests that the Montessori model may have successfully supported the participants as they developed their perspectives on learning, knowledge, relationships, responsibility, and decision making, allowing them to acquire a worldview consistent with a high level of epistemological maturity. This implies that educators may wish to consider more widespread use of the Montessori Method and practices in new contexts, including charter and public schools. However, given the tools utilized in this study, explicit claims cannot be made about its epistemological implications, and further research is necessary.

Theoretical/Conceptual Framework

The theoretical framework for this study is constructivist-developmental theory. This theory is founded on the work of Piaget (Boes, Baxter Magolda, & Buckley, 2010) and built upon by Perry (1979), Moore (2002), Kegan (1994), Drago-Severson (2004), and others. Piaget introduced the idea that children evolve through four developmental stages during which they “develop through experience in order to understand the world and perform complex operations” (Boes et al., 2010, p. 4). Perry first applied this idea to adolescents and young adults and Moore,

Kegan, Baxter Magolda, Lynch, Kitchener and King, Kroll, Kronholm, and others continued to explore and elaborate on the theory.

Assumptions

It is assumed that the LEP is an accurate measure of epistemological development. As in all qualitative research, the researcher is the prime investigative and analytical tool, thus the personal experience and bias of the researcher are assets and liabilities in both the design of the study and the analysis of the data. Because I have been employed in the Montessori field for the past 40 years, my experience inevitably informs my understanding of the Montessori experience, which is central to the focus of this study. Obviously, this same experience could lead to researcher bias, so I made consistent efforts to “engage in ongoing critical self-reflection by way of journaling and dialogue” (Bloomberg & Volpe, 2008, p. 41) to illumine and account for this bias. In addition, my years of dedication to the Montessori Method of education have led me to believe that this form of education has positive effects on the individuals who participate in it. I acknowledge that belief and realize that it too can color my perceptions. I also concede that I agree with Goldberger (1996) in regard to her statement that constructed knowing “can be considered ‘superior’ in its flexibility and in the sense that it represents a meta perspective on knowing” (p. 13).

Limitations/Delimitations

This study is limited by the purposive “snowball technique” (Patton, 2002, p. 237) used to identify and recruit potential participants. They were self-selected from a group of former Montessori students who were contacted by former teachers, parents, friends, or because they encountered information about the study in social media or through other appeals. Additionally, Montessori programs can vary considerably in how they interpret and carry out details of her

method. This variation may have affected the consistency of the participants' responses. Aside from the information about race included in the LEP survey, no other demographic information was collected. It would have been valuable to have known the colleges the students were currently attending.

The delimitations concern the specific qualifications required of the participants,--that they had completed at least six years of Montessori education prior to their attending college, and that they were completing or had recently completed their freshman year when they took the LEP. Although I initially sought interviews with students who would have scored relatively high on this quantitative measure, assuming that they were more epistemologically mature, the limited total number of respondents available did not allow me to use this criterion; all 13 were interviewed.

I limited the study to individuals with at least 6 years of Montessori schooling, believing that this suggests a thorough grounding in that educational experience. That said, as previously mentioned, the Montessori Method can be interpreted and manifest differently, but it was not possible to screen or evaluate each school previously attended by the participants in terms of their adherence to her stated approach.

Definition of Terms

- **Accommodation**, according to Piaget, is the process by which people take in new information from their experiences with the environment and are able to include it within their pre-established paradigms for understanding their world.
- **Assimilation**, according to Piaget, is the process by which people take in new information from their experiences with the environment which causes them to change their meaning making process.

- **Constructed knowing**, mature thinking, or sophisticated epistemological beliefs refers to the position of epistemological perception in which the knower understands that “truth” is contextual, that knowledge is tentative, not absolute, and that the knower is intimately involved with the known (Goldberger, Tarule, Clinchy, & Belenky, 1996, p. 5). “The idea of sophisticated beliefs embraces evolving knowledge, multiple approaches to the justification of knowledge, integration of knowledge...gradual learning, and ever growing ability to learn” (Hoffer & Pintrich, 2002, p. 113).
- **Development** according to Sanford (1969) occurs in a specific, progressive order which is influenced by the interaction between an individual and the environment. It includes “the organization of increasing change” (p. 47), which is more complex than just growth or change and a perspective that sees the individual as a whole, wherein “intellect, emotion, and action are all inseparable and in interaction” (Moore, 2002, p. 26),
- **Epistemology** concerns our understanding of what constitutes knowledge and knowing. It also encompasses the relationship between knowledge and knowing and the process of learning. Epistemological development involves how “the individual develops conceptions of knowledge and knowing and utilizes them in developing understanding of the world” (H, p. 4).
- **Growth** indicates the process of increasing epistemological maturity, as it is used by Kegan (1982), and Baxter Magolda et al., (2010). Thus growth is a process of development that involves assimilation and accommodation as we encounter and process information from our experience.

- **Learning Environment Preference (LEP)** was developed by William Moore (1987) “as ‘an objective-style’ measure of William Perry’s scheme of intellectual and ethical development” (p.3).
- **Meaning making system**, *ways of knowing*, and *developmental level* are interchangeable terms which refer to the way in which individuals make sense of what they experience. They are used to describe “an internally consistent meaning-making system from which we, as human beings, interpret our experience” (Drago-Severson, 2004, p. 5). “Our ways of knowing organize how we understand our experience, ourselves, others, and our life situations” (p. 22).
- **Transformational learning** is learning which changes how a person knows; it moves her from one meaning making system or developmental level toward a more complex level. “When a person’s way of knowing changes, the person comprehends information in a different way and has enhanced his or her capacities...to manage the complexities of work and life” (Drago-Severson, 2004, p. 19).

Summary

This chapter described the context for an exploratory qualitative study of how undergraduate college students, most of whom were completing their freshman year, who were educated according to the Montessori Method during their early years, describe their experiences at college. Researchers have suggested that many adults are not sufficiently epistemologically sophisticated to successfully address the problems posed by modern life. This study examines the possibility that a Montessori education might provide the support, challenge, and consistency necessary to remedy this situation. I discussed the background, and pointed out the dearth of research addressing this question and the need for exploration in this area. I explained the choice

of method and the possible significance of the results as well as the limitations and delimitations, and concluded with a definition of relevant terms.

Chapter Two includes a discussion of constructivist developmental theory, specifically as it pertains to Perry's, Kegan's and Montessori's perspectives. It also contains a review of the literature concerning Montessori outcomes and the experiences of students in general during their first years in college. In Chapter Three, I describe the explorative, qualitative methodology and the methods I utilized for data collection and analysis. Chapter Four contains the findings reached by the study after the data was collected and analyzed, and Chapter Five consists of a discussion of the implications of this study and suggestions for further research.

Chapter II: Literature Review

The connections among an individual's perception of knowledge, her ability to learn, and the quality of her learning are a relatively new area of focus and concern within the field of educational research. The notion that "self- authorship," which is a combination of epistemological, intrapersonal, and interpersonal maturity, is an important and necessary goal in the educational process is currently being explored and discussed (Baxter Magolda et al., 2010). However, more than 100 years ago, Montessori saw children as active co-constructors in their process of becoming; the teacher's role was therefore to support and respond to the unfolding of each child's potential.

This exploratory, qualitative study examined how students whose early education was primarily in Montessori schools described their experiences of their first years of college. To place this study in context, I will first review literature related to constructive-developmental theory, particularly Perry, Kegan, and researchers whose work derived from Perry. I will then introduce Montessori's planes of development, with particular attention to the comparison between the concept of *holding environment* and *prepared environment*. After this, a review of pertinent studies and dissertations follows.

Sources, Searches

The process of searching for pertinent information for this literature review included the use of the ERIC, Education FT, JSTOR, PsycInfo&PsycArticles, and Omnifile FT data bases for peer reviewed articles, as well as PROQUEST for dissertations. Descriptors included Montessori, alternative education, epistemology, intellectual development, Perry scheme, holding environment, self-efficacy, student adjustment, higher education, and student centered learning in a variety of combinations. Relevant researchers were also searched for by name. A

major challenge to the thoroughness of this literature review is the relative dearth of research on Montessori published in peer reviewed journals. However, I have included the few relevant dissertations that I have been able to access.

Constructive-Developmental Theory

Constructive-developmental theory builds on the work of Piaget, who examined the cognitive development of children's knowledge, as well as the development of their social and moral reasoning. As Drago Severson (2004) observes, "Many of the ideas that form the foundation of Piagetian theory also form the foundations for constructive-developmental theory (p. 20). First and foremost, constructive-developmentalists purport that people are continually engaged in the process of becoming rather fixed entities, more verb than noun; this process is constantly in flux and evolving and involves making meaning. Piaget described this process as follows, "Knowledge is constructed by the individual through her acts, through her interaction with environment, by means of the complementary adaptive mechanisms of accommodation and assimilation. In this process, progressively more advanced levels of knowledge evolve" (as cited in Martin & Booth, 1997, p. 6).

Constructive-developmentalists theorize that it is natural for the human organism to "develop all its capacities in ways which serve to maintain or enhance the organism" (Kegan, 1982, p. 4), and that human consciousness is constantly in the process of evolving by differentiating from the larger environment and then reconnecting with it in new, more complex ways, and this "*differentiation always precedes integration*" (Kegan, 1994, p. 326). The natural path of the human being is to evolve her consciousness through a process of refining her perceptions of self and other to levels of greater complexity and objectivity.

Learning and meaning making are developmental processes which take place as the individual interacts with the environment, as well as other individuals, and reflects on the results of those interactions. This interaction and reflections about it changes how the individual perceives her relationships with herself, others, and the environment. So, the individual innately develops, but is also a co-creator of the self she is in the process of becoming through the interactions she has and the meaning she creates throughout this developmental process. “The heart of the constructive-developmental framework [lies] in its capacity to illuminate a universal on-going process” (Kegan, 1982, p.264).

Constructive-developmentalism is based on two ideas: constructivism and developmentalism. Constructivists theorize that individuals “actively construct” (Drago Severson, 2004, p. 20) their perceptions of what they experience, therefore their reality. Further, knowledge is constructed by the knower from existing beliefs, perceptions, and experiences (Airasian& Walsh, 1997, p. 44, as cited by Moore, in Hofer and Pintrich, 2002, p. 24). “Constructivism addresses an epistemology focused not just on knowledge in some abstract sense but in the specific context of how people learn and approach learning” (p. 25); thus ones’ personal epistemology evolves depending on one’s experiences over time. Schommer, Crouse, Rhodes, and others (Hofer &Pintrich, 2002) however, see personal epistemology as a system of independent beliefs which may develop in different timeframes separately from one another (p. 6), and Hammer and Elby suggest that it is tied to specific educational contexts (p. 8). Thus, there are several different approaches to personal epistemology within the field.

According to Kegan (1982), the way people view their experiences can alter and develop over time in accordance with identifiable periods of stability and change. “Development is a process of outgrowing one system of meaning making by integrating it [as a subsystem] into a

new system of meaning” (Kegan&Lahey, 1984, p. 203). Such developmental shifts occur as individuals are able to distance themselves from (take as object) more and more of what they had earlier subjectively perceived as themselves. Overall, such growth processes are gradual, progressive, and move in the direction of greater complexity. Individuals develop at their own pace, depending on the effectiveness of their *holding environment*; they continually organize information/experiences in ways that make sense to their own meaning-making systems, which hold together until they can no longer incorporate new experiences into the existing system (assimilation), at which point they must change the system (accommodation). The transition from one developmental stage to another is “an incremental progression of increasing complexity in an individual’s cognitive, emotional, interpersonal, and intrapersonal capacities” (Kegan&Lahey, 1984, p. 22).

As we grow, the constructive-developmentalists suggest, we go through different developmental phases or stages, “successive processes of transformation” (Kegan, 1982, p. 268) where we “emerge from the self [we] have been” (p. 148). Each successive stage encompasses who we were before and moves beyond it to a new and more complex level of perception. Both Kegan and Montessori have identified specific phases or stages of development people experienced in their evolutionary life journey and these phases define human’s capacity for specific kinds of understanding and meaning making. Perry’s research specifically focused on changes that occur during the college years.

Perry’s Developmental Scheme

Perry led a pioneering, longitudinal study of college students beginning in the 1950s. The resulting data revealed what he interpreted as a developmental process, characterized by significant, progressive, qualitative changes in how college learners perceive and approach their

learning and what it is they need to learn. From this research, he developed a scheme to describe this process, He proposed a model comprised of nine developmental positions and three positions of deflection, which constituted different levels within his scheme (Perry, 1999). Broadly speaking, these positions can be divided into four parts. Positions 1 and 2 represent an absolutist, dualistic perspective that is progressively modified by a simple pluralism, which he called “multiplicity” (Perry, 1968, p. 13). Positions 3 and 4 represent the broadening of viewpoint to allow for the many diverse perspectives to which they are exposed, or “relativism”. Position 5, which “is arguably the most significant transition within the Perry Scheme” (Moore, 2002, p. 21), represents a transition from the perception of the world as primarily dualistic, although increasing in the number of instances when this is not the case, to a paradigm based on relativity in which there are a few instances where there may be a right/wrong duality. In this period, individuals become conscious of themselves as active makers of meaning. The final three positions encompass the steps necessary to take the responsibility of making “commitments” in a relativistic world. Perry’s (1999) positions are further elaborated below:

- Position 1: Basic Duality. Students in this position see the world in terms of black and white, right and wrong. They believe that the professors, “Authority”, possess all knowledge and it is their role to provide students with the information necessary to pass the course. Learning consists of memorization of facts which are true.
- Position 2: Multiplicity Pre-Legitimate. In this position, students now realize that there can be different perspectives, professors are not always right, and knowledge does not always fit into dualistic categories. This may cause students to accept and appreciate different views and understand the need to discover answers on their own. If this does not occur, they may have difficulty moving to later positions.

- Position 3: Multiplicity Subordinate. Students now perceive that although there may be an “Absolute Truth”, it has not yet been discovered. “Authority” may not be able to provide all the answers; therefore, its’ right to pass judgment on others’ perspectives comes into question. The focus changes from finding the right answers to finding out what the professor wants.
- Position 4: Multiplicity Correlate/Relativism Subordinate. At this point, students may take the path of opposition or that of adherence. The realization that “The Truth” may not be known, and all opinions, including their own may be equally valid cause some to question Authority’s right to pass judgment – which can make moving through this position more difficult. Those who continue to accept Authority’s right to judge their opinions despite their awareness of differing opinions and the need to respect them seem to have an easier time. For both, the focus changes from concern about what Authority wants them to learn to how it wants them to think, but the motivation to learn is still primarily extrinsic.
- Position 5: Relativism Correlate. During this position, students develop the capacity for detachment and objectivity and an understanding of their growing competence. They come to the realization that how Authority wants them to think also reflects the way that Authority thinks, thus they move towards a more collegial relationship with their professors, viewing them more as facilitators. Reason is used to determine which perspective or opinion is closest to the truth.
- Position 6: Commitment Foreseen. This position marks a shift in students’ perceptions to include the realization that their ever changing knowledge depends on their perspective

and their method of acquisition. Therefore, the students' own values and views come into play along with reason when determining validity.

- Position 7: Initial Commitment. At this stage, students frequently determine their occupational direction, which is influenced by their integrating the knowledge they have acquired into their personal perspective and philosophy. This often provides students with a stronger sense of self, as well as a sense of relief.
- Position 8: Orientation in Implications of Commitment. As students move into this position, they discover that having made the first commitment requires additional commitments. This may replace the initial relief they felt with concern about the resulting limited options.
- Position 9: Developing Commitment. This position is rarely reached by students during their college years, but it is characterized by security of identity and the ability to fully embody and manifest ones' commitments in aspects of life.

This model provides “a road map to the development of epistemology during late adolescence, as influenced by a liberal arts education” (Hofer, 2002, p. 5). First Belenky, Clinchy, Goldberger, and Tarule, (1986), and later Goldberger, et al. (1996) expanded on Perry's work to include and interweave the female perspective into his developmental scheme and further explore the nature of constructed knowing. Goldberger, et al continue to believe that constructed knowing offers a broader, more valuable perspective because of “its flexibility, and in the sense that it represents a meta perspective on knowing” (p. 13). They also elaborated that meaning making is something that occurs within the context of a group, and is in fact the co-construction of knowledge. “Meaning making” she continues, “is not a solitary pursuit, but it is interactional and negotiable” (p. 14). Exploring how individuals perceive the process of making

meaning and understanding knowledge as they mature may offer insights into creating ways to support this development.

Baxter Magolda (1992, 2002, 2010) focused specifically on “epistemological reflection” as well as how gender influences patterns in knowing. She undertook a longitudinal study which illustrated a developmental path of meaning making similar to those described by Perry and Belenky et al., as manifest by a group of predominantly white students at a Midwestern university. She developed a model consisting of four ways of knowing, moving from external to internal meaning making, and followed her subjects into adulthood. She found that contextual knowing rarely occurred during the college years (Baxter Magolda, 2002, p. 96), and that internal belief systems did not begin to take precedence over external ones until the mid to late twenties for most of her participants (p. 99) .

King and Kitchener (1994) expanded on this work to include an exploration of the relationship between personal epistemology and critical thinking skills (Hofer, 2002, p. 6) as well as studies concerning how adults make critical decisions. These studies suggested that making such judgments required a level of epistemological maturity that allows individuals to make decisions based on available evidence, despite uncertainty. From their findings, they developed a seven stage model of the development of reflective judgment. They stated that “the developmental levels of college graduates probably will not be sufficient for the kinds of problems they will be asked to address in a myriad of adult roles” (King & Kitchener, 2002, p. 56). They also explored ways of providing contextual support during the college years to assist students in responding at higher developmental levels, suggesting that it may be possible to assist in the development of epistemological maturity.

Schommer and others have approached epistemology non-developmentally, seeing it as being composed of five independent dimensions that need not develop in synchrony with one another. Schommer-Atkins discussed how one's own beliefs can interfere with the study of epistemology and will change and develop over the course of time and exploration (Hoffer&Pintrich, 2002). She further asserted that "Children who believe the ability to learn can actually improve over time will stand up to the task by trying alternative paths to learning and continuing to persist" (p. 104). She developed a questionnaire to further study and assess epistemological beliefs. The study of epistemological beliefs was important, from her perspective, despite the challenges, because it is an attempt "to understand learners, to help teachers help learners...and to inform other theories of cognition and affect" (Schommer-Aikins, 2002, p. 108). Further work in developing qualitative approaches to assessing epistemological development was also deemed a priority.

Kegan's Orders of Consciousness

A practicing psychotherapist, Kegan (1982) developed a theory about meaning making and the evolution of consciousness which he considered to be a "neo-Piagetian" approach to understanding how humans can reinvent and recreate themselves as they mature. Inspired and influenced by the work of Piaget, Erikson, Perry, Kohlberg and others, he perceived that individuals have the potential to go through a series of developmental stages throughout their lifetimes which involve changes in how they think, feel, and relate to self and others.

Kegan (1994, p. 32) identified five qualitative shifts in an individual's capacity to make meaning from his experiences, and to include more and more of what is experienced as object, or not specifically tied to or embedded in the self. He proposed "a view of the human being as meaning-making and exploring the inner experience and outer contours of our transformations in

consciousness throughout the lifespan” (p. 1-2). He described these as five Orders of Mind or Consciousness, a model of progressively more complex ways of thinking, in which each successive order enlarges upon the previous one and incorporates it, allowing the individual to be able to reflect on the meaning making abilities of the preceding stage. Kegan (1986) suggested that “human development involves a succession of renegotiated balances...which come to organize the experience of the individual in qualitatively different ways...affect is essentially phenomenological, the felt experience of a motion...the source of our emotions is the phenomenological experience of evolving – of defending, surrendering, and reconstructing a center” (pp. 81-82). Beyond childhood, these qualitative shifts are not tied to specific ages.

- 1st Order (2-6 years old) The Impulsive Mind “I am my impulses”. During this period, children are not capable of abstract thought. Although physical objects are seen as separate from self, they are directly connected to the children’s perception of them so that if their perception of the object changes, the object itself is thought to change. Children in this order are egocentric, and cannot understand that others have different perspectives.

However,

pre-operational children do evolve, constructing...a new organization of the physical world. And when they do, it is not because they have listened more carefully to tutoring grownups, or had it unfold within them like their developing physiologies, so much as it is because of their own activity in the world, evolutionary activity – an activity biologists speak of as the move toward the greater coherence of one’s organization. (Kegan, 1982, p. 41)

- 2nd Order (6 years – adolescence) The Instrumental Mind “I have impulses”. Kegan (1982) portrays this order as a time when children have impulses (rather than being them), which brings them a sense of power, freedom, independence and agency. They become able to categorize objects and people according to their characteristics, but

cannot hold their own and another's perspective at the same time if the two are contradictory. They also project their own needs onto others.

- 3rd Order (post adolescence; psychological “adulthood”—most adults in the Western society are in this level of consciousness) The Socialized Mind “I am my relationships”. Kegan sees this sense of self as inextricably tied to others’ perceptions of that self. Individuals are able to set aside their own needs if they interfere with those of others. Although able to think abstractly, they are not comfortable with anger and have difficulty with conflicts as these are a part of different shared realities, they are not self-reflexive.
- 4th Order (variable, if achieved) The Self-Authoring Mind—the major developmental task for most adults in the modern world “I have relationships” “I am the organization”. Individuals now have a new capacity for independence and self-definition. Knowledge is consciously constructed and values and ethics are situational, although the self is limited because it is identified with the limited ego. People are ideological and need the recognition of a group, or a set of values that limit the full expression of self, and thus cannot act outside of self-created boundaries. The institution takes priority over the individual.
- 5th Order (after 40 years, if achieved) The Self-Transforming Mind “I have organization” “I am the whole”. The few individuals who reach this order, (less than 10% of the population) are capable of holding emotional conflict as an interior conversation. Justice takes priority over the letter of the law; the group becomes all of humanity. There is now a self to be brought to others, which is able to hear criticism about its activities as it no longer is these activities, and wishes to serve the larger self, the whole.

Montessori’s Planes of Development

Montessori also discerned that individuals go through stages of development, which she referred to as planes, and that they possess specific characteristics and capacities during those discrete moments in time (Gordon, 1993). She focused specifically on the aspects of their developmental nature which are observable and can be supported in a learning environment. Montessori believed that an understanding of the developmental nature of the children to be taught was a critical aspect of the appropriate preparation of the teacher, the environment and the curriculum. “In order to teach anything successfully... one must understand the nature and psychology of the person to be taught, his age and stage of development, how it is that a person learns at this point in his development” (Thrush, 1975). She rejected the old linear model of growth for “one of transformation [in which each earlier plane] always prepares for the one that follows, forms its basis, [and] nurtures the energies which urge the individual towards the succeeding period of life” (Grazzini, 1996, p. 219). She also observed that individuals go through specific times when they are especially attuned to acquiring knowledge about specific aspects of the world, which she called “sensitive periods”.

Montessori theorized that humans go through four planes of development, which she tied to specific age spans. These planes are the stages into which Montessori divides human growth from birth to Maturity. She does not explore the area of continued development after achieving adulthood, but her description of the qualities attained at Maturity are similar to those attributed to individuals of the 4th and 5th order by Kegan. Each plane consists of a six year period and is divided into 2 three year sub-planes. Achieving the goals of each plane is necessary to acquire maximum growth in the following planes. They are comprised of:

- Plane 1 – the period of early childhood (0-6 years), the time of “The Absorbent Mind”.

Montessori sees this plane as a time of dramatic growth and transformation, which

emphasizes the growth of physical independence; the self is constructed through concrete interaction with the physical environment and learning is predominantly unconscious.

- Plane 2 – the period of childhood (6-12 years), the time of “The Abstracting and Reasoning Mind”. During this period, Montessori perceives that the child is more stable and that growth and development occurs in a more incremental fashion. This plane emphasizes the growth of intellectual independence and the development of the moral self, distinguishing between right and wrong. It is also a time when self is seen in relation to peers.
- Plane 3 – the period of adolescence (12-18 years), the time of “The Social Mind”. Montessori perceives that this period corresponds to the first plane of development, in that it is another time of instability and dramatic growth. The emphasis is on the growth of social and economic independence and interdependence, as well as emotional development and seeing the self in relation to human society. The larger society, community, vocation, and service to others are important focuses for learning during this period.
- Plane 4 – Maturity (18-24 years), the time of “The Mission-oriented, Vocational Mind”. The Fourth Plane corresponds to the Second Plane, as it is more stable, and growth is more regular. It is a period of growth of independence and interdependence in vocation and contribution to all humanity. The focus is on learning about one’s life’s purpose and contribution.

A Comparison of Kegan and Montessori

Montessori and Kegan have slightly different perceptions of the characteristics of individuals at different phases of development. Montessori, as an educator, primarily focused on

the earlier portion of the developmental spectrum; Kegan, as a practicing psychotherapist, was more involved in adolescent and adult development. Additionally, the characteristics Montessori attributed to each stage were predicated on the child experiencing learning and development within the appropriately prepared Montessori environment. Despite these differences, they both perceived the human being as a process, always growing, developing and changing through interaction with the environment. They observed that human growth was punctuated with transitional periods, or crises, which consisted of the “transformation of meaning” (Kegan, 1982, p. 266) and a change in the way individuals learn and perceive the world (Thrush, 1975). Further, both saw this as a process of separation, individuation, and reconnection, always in more complex ways. Kegan posited that these transitions were related to balancing two human needs, that of being included, and that of being autonomous or independent. (p. 106-107); thus, “all developmental transitions are about a new form of ‘ego autonomy’” (p. 155).

They both observed that, although the maturation of thought and perspective was developmental and could not be accomplished through the efforts of others, the nature of the environment the individual experienced and the approach of those who wished to foster the growth of the individuals within the environment, could either support or hinder the self-engendered, self-motivated natural process of evolving and maturing. “Education”, Montessori (1989) declared “is a natural process spontaneously carried out by the human individual, and is acquired not by listening to words but by experimentation upon the environment” (p. 2). Further, the task of the teacher, rather than lecturing, becomes preparing the environment in developmentally appropriate ways to invite and excite the learner “and then refraining from obtrusive interference” (p. 3). Both Kegan and Montessori felt students could best be supported through the thoughtful preparation of a developmentally appropriate learning environment,

which Montessori called *the prepared environment* and Kegan referred to as a *holding environment*. The following discussion compares Kegan's terms, specifically *holdingenvironment*, *confirmation*, *challenge*, *continuity*, and *bridging* to specific aspects of the Montessori approach.

The holding environment. "I never teach my students. I only provide the conditions in which they can learn" Albert Einstein.

Because constructive-developmentalists view this process of human transformation and evolution as developmental in nature, it is not one they believe that teachers, parents and other adults can cause, nor can the individual consciously, through effort, make a transition from one phase of development to the next. However, by knowing about the nature of the stages of development, it is possible for those who wish to support the process to create what Kegan (1994) called a *holding environment* (p. 342). The first step in creating such an environment is to consider the nature and stage of development of the individual to be supported.

Kegan (1982) suggested "the developmentalist urges curriculum designers and teachers first to recognize the agenda upon which the child is *already* embarked, and which the teacher can only facilitate or thwart, but not himself invent" (p. 255). This sentiment was also echoed by Montessori. "No one can predict what the destiny of any one individual will be. The only thing we can do is offer every child the opportunity to develop according to its own potentials and to acquire new perspectives that will facilitate its exploration and internalization of the cultural world around it" (Montessori, 1976, p. 62). Kegan (1994) speculated that for educational environments to have optimal results, they should confirm the validity of individuals, challenge their assumptions and press them to function at their "growing edge" (p. 317), and finally provide continuity, by remaining in relationship with them as they transition to their next order

of consciousness. He further stressed that “it is the teacher’s job to put herself out of business by preparing her student to do for himself what she currently does for him” (p. 288). This is also in keeping with Montessori’s perspective as she stated that “We wish to point out that beyond a certain point every help given to a child is an obstacle to its development” (Montessori, 2007, p. 27).

The Montessori prepared environment, which includes the materials, curriculum, and transformed adult or guide appears to fulfill Kegan’s three criteria by allowing maximum possible growth and evolution during each developmental phase. Significantly, guides trained in the Montessori method are called to undergo a process of self-awareness and dedication to nurturing the spirit of the child called “the transformation of the adult” (Thrush, 1975). They “must be created anew, having rid [themselves] of pedagogical prejudices” (Montessori, 1989, p. 67). This is essential if they are to be a beneficial part of the holding environment, for as Kegan (1982) pointed out “he or she [the teacher] is trying to become a helpful part of the person’s very *evolution*” (p. 278). In Montessori education, “the role of education and the teacher is to support the process of development so that it proceeds as naturally as possible, offering education, knowledge, and support *without* getting in the way of development” (Lide, 2012, p. 13).

Confirmation. “The prepared environment for children at each plane of development fosters differentiation and integration at many levels” (Minardi, 2010, p. 97).

Montessori’s prepared environments are designed to specifically meet the developmental needs of the children they serve in each plane of development; the adults/guides are well versed in the phases of human development, so that they may be prepared to meet, accept and validate the children where they are. Further, the individual-centered curriculum allows each learner to proceed at his or her own pace, and affords them significant choice regarding what is to be

worked on, for how long, and in what manner. Guides approach all learners with respect for who they are and the great work of co-creation in which they are engaged (Duffy & Duffy, 2002). All of this validates the individual for who she is. In this environment, collaboration and cooperation in learning replace competition with others; this change in focus encourages positive social interaction and makes the learning environment a safe, non-threatening place.

Montessori was also well aware that much of the work involved in creating knowledge takes place subconsciously, and her use of Seguin's "three period lesson" (Gordon, 1993, p. 94) allows students time to absorb and for their ideas to emerge, rather than requiring of them immediate memorization and regurgitation. The learner also decides when she is ready to be assessed in a specific area on a specific material or concept, thus removing performance anxiety (Selden & Epstein, 2003).

Challenge. Included in the Montessori prepared environment is an array of specialized materials designed to embody concepts which allow students to learn through individual exploration and discovery (Gordon, 1993). These didactic materials are open ended and multi-purposed; they challenge learners to move forward as they can, progressing from one level of understanding to the next as they discover new meanings. The guides observe the individual learners so they are able to present new materials which are sufficiently challenging to keep them engaged and excited, working at their "growing edge" (Kegan, 1994, p. 317). This capacity to match the learner and the lesson at the right moment in development is another important skill Montessori guides develop in their training. "It is imperative to evolve strategies that aim to draw out the learner's fullest potential at each successive level of development" (Gang, Lynn, & Mayer, 1992, p. 18).

Montessori also perceived that problem solving offered opportunities for personal development, thus the materials present challenges for the learners to meet on their own, and opportunities for learners to discover the concepts concretized within the materials through individual exploration. The adult is there to suggest possibilities, but the challenge is to support the learner in making new discoveries on her own, and supporting her in times of discomfort. This coincides with Kegan's ideas about how best to support a learner confronted with a problem or challenge. Kegan (1982) proposed that those supporting the learner (in this case, he was specifically discussing the "constructive-developmental clinician") needed to protect opportunities for consciousness to develop and for meaning to evolve. He would therefore "hold the door open to them [to these moments for growth] in his choice to resonate *to the experience* that having such a problem may entail, rather than to help solve the problem, or try to make the experience less painful" for the client/learner (p. 274).

Continuity. The Montessori environment includes mixed age groupings, so the learners remain with the same group and guides for three years. This makes it more likely that learners making transitions in the ways they learn and perceive themselves, their environments, and their relationships, will have the same adults and peers present (as well as the same learning tools and materials that embody concepts) during this process of reconnection at more complex levels. This leads to the concept of bridging.

Bridging. Another important aspect of the holding environment is its ability to provide a bridge between one order of consciousness or plane of development and the next, which is a part of continuity. It is this bridging capacity that allows what occurs at school to be transformational, especially when it connects what occurs there with the broader world (Kegan, 1994, p. 294). Montessori also was aware of the need for educational environments to have this

capacity. In their book on the transformational nature of Montessori’s method of education, Gang, Lynn and Mayer (1992) reiterate that “transformational learning is predicated on the ability of assisting individuals and groups in their movement across the bridge” (p. 18).

Supporting healthy growth. Both Kegan and Montessori felt that the holding environment or prepared environment could be said to embody almost a “preventative psychology” (Kegan, 1982, p. 256), that is, it provides the natural, spontaneous support which facilitates development and allows for maximum evolution of consciousness, which helps prevent what Montessori called “deviated behavior” (Thrush,1975). Montessori suggested that when learners were able to move freely within developmentally appropriate environments and become involved and engaged in creative, productive, freely chosen work, many of their disruptive and unproductive characteristics fell away (Thrush, 1975), “hence, the psychic healing achieved...constitutes a kind of prophylaxis with respect to psychoanalysis” (Trabalzini, 2011, p. 144). Montessori used both the term conversion as well as normalization to describe the change observed in children’s behavior once they had become adapted to the prepared environment; she posited that the change was “a form of healing from nervous disorders or other physiological illnesses resulting from the child’s deviant development with respect to natural tendencies” (p. 185).

Table 1		
<i>A Comparison of the Developmental Phases of Perry, Kegan, and Montessori</i>		
Perry’s positions	Kegan’s orders of consciousness	Montessori’s planes of development
	1 st order: 1-6 years The Impulsive Mind <ul style="list-style-type: none"> • Needs to express impulses 	1 st plane: Early Childhood – birth to 6 years The Absorbent Mind <ul style="list-style-type: none"> • Pre-operational

	<ul style="list-style-type: none"> • Objects and individuals are separate but subject to child's perceptions of them • Has no capacity for ambivalence • Needs immediate rewards • The self is tenuous • "I am my impulses" 	<ul style="list-style-type: none"> • Period of dramatic growth • Emphasis on physical growth and independence, the concrete environment, self-construction • Learns through doing • Absorbs through senses • "What is it?" "Help me do it myself?"
<p>Positions 1-3: no specific age</p> <p>Dualism</p> <ul style="list-style-type: none"> • Early: Right vs. wrong, we/they, black/white – no gray areas • Late: Knowledge does not always fall into right/wrong categories • Memorization and recall is equated with learning • Early: Authorities are the source of knowledge – have (or will have) the right answers • Late: Focus on what the professor wants, not right answers 	<p>2nd order: 6 years – adolescence</p> <p>The Imperial Mind</p> <ul style="list-style-type: none"> • Has own private world • Understands characteristics and traits, cause and effect • Can delay gratification • Identifies with own needs and desires • Projects own needs onto others • Can make deals, plans, and strategies • Can experience guilt • Develops a conscience • "I have impulses" • Transition to the next order is marked by moodiness 	<p>2nd plane: Childhood - 6-12 years</p> <p>The Abstracting, Reasoning Mind</p> <ul style="list-style-type: none"> • Concrete-operational • Calm phase of uniform growth • Emphasis on intellectual growth and independence, • The power of the imagination • Understanding right and wrong, • Self in relationship to peers (the gang or herd period) • Moving from concrete understanding to abstract thinking • Desire to acquire information • The need for wider culture, the world, the universe • "Why is it?" "Let me know!"
<p>Positions 4-6: no specific age</p> <p>Multiplicity-Relativism</p> <ul style="list-style-type: none"> • Early: Everyone is entitled to own opinion • Late: Some opinions are more justifiable 	<p>3rd order: Adolescence (or later)</p> <p>The Socialized Mind</p> <ul style="list-style-type: none"> • Sense of self and values derived from others • Self is threatened by disagreement and 	<p>3rd plane: Adolescence - 12-18 years</p> <p>The Creation of the Social Man</p> <ul style="list-style-type: none"> • Early formal operational • Period of dramatic growth, instability, and transformation • Social/economic growth

<p>than others – need to develop criteria for making judgments</p> <ul style="list-style-type: none"> • Knowledge is not absolute – differing opinions exist and should be respected • Knowledge is always changing 	<p>conflict</p> <ul style="list-style-type: none"> • Feels self-conscious • Can reason abstractly and classify more complexly • Understands shared feelings, agreements and expectations • New capacity for empathy • “I am my relationships” 	<p>and independence</p> <ul style="list-style-type: none"> • Focus on the larger society, community, relationships, vocation, service to others • “How can I fit in?” • “Let me do with others!” • “Let me become myself!”
<p>Positions 7-9: no specific age Commitment</p> <ul style="list-style-type: none"> • Knowledge is diverse, contextual and colored by perspective, experience and values • Knowledge is integrated into personal philosophy • Stability and flexibility are essential • “I live my commitments” 	<p>4th order: no specific age The Self-Authoring Mind</p> <ul style="list-style-type: none"> • Capacity for independence and self-definition • Emotions are internally controlled • Has defined boundaries • Wants respect • Is ideological • “I have relationships” • “I am the organization” 	<p>4th plane: Maturity - 18-24 years The Cosmic Mission</p> <ul style="list-style-type: none"> • Full formal operational/dialectical • Stable, less dramatic growth • Emphasis on great potentials • Discovery of mission • Understanding unlimited possibilities of education and culture, and the interdependent nature of humanity • Planning post-secondary education and job training
	<p>5th order: no specific age (after 40) The Self-Transforming Mind</p> <ul style="list-style-type: none"> • Justice takes priority over the letter of the law • The community is universal, wants to serve the whole • “I have the organization” “I am the whole” 	

Information adapted from Perry (1999), Moore (2002), Kegan (1982; 1994), Taylor (2006, p. 202), Gordon (1993), and Grazzini (1996)

Montessori Research

A comprehensive summary of articles and research about Montessori and/or the Montessori Method of education published in non-Montessori peer reviewed journals between 1996 and 2009 (Bagby & Jones, 2010; Bagby & Sulak, 2009) listed a total of 90 articles. Of these, 35 were actual studies. Most focused on early childhood education and the elderly; 2 concerned outcomes for middle school students and 1 concerned the effects of prior Montessori experience on high school students. I searched for articles concerning Montessori written between 2009 and 2012, and found a total of 8 studies which were published in non-Montessori peer reviewed journals, none of which concerned students past elementary school age. Bagby, Wells, Edmonson, and Thompson (2014) recently published a further review of the literature between 2010 and 2013 which includes 83 articles with foci similar to those previously mentioned. The one relevant study, that of Shankland, Genolini, Franca, Guelfi, and Ionescu (2010), is discussed below. Although it and the other studies that follow are not specific to the experience of post Montessori college students, they illuminate aspects of the Montessori experience in general and how it compares to more traditional methods of education.

A majority of research concerning Montessori outcomes has focused on students cognitive achievements (Dohrmann, Nishida, Gartner, & Grimm, 2007, p. 206). Much of it is difficult to interpret or make generalizations about due to problems with the design of the studies, including lack of random assignment, small sample size, and attrition. Other factors that contribute to interpretation difficulties include these issues: the authenticity of the Montessori program studied and the level of implementation of the method are rarely mentioned or measured, and the length of time the students spend in the program is infrequently recorded.

Additionally, most Montessori programs are private, thus the high SES of many of the students may have influenced the results. Nonetheless, some bear further examination.

In their quantitative, causal comparative study of primarily poor inner city students, Lillard and Else-Quest (2006) compared demographically similar kindergarten and 6th grade children attending a Montessori public school with those in more traditional settings. Their sample included 53 control and 59 Montessori students. These students had all attempted to enter the public Montessori program by means of a lottery when they were two or three. The ones who did not win comprised the non-Montessori group. In addition, the public Montessori program was held to high AMI standards of implementation of the Montessori Method. These standards included a 3 hour, uninterrupted work period, freedom of choice, the use of a full compendium of Montessori materials, and the implementation of Montessori's educational philosophy.

In tests evaluating both cognitive/academic and social/behavior measures given at the end of the school year, the Montessori students had superior outcomes. At the kindergarten level, Montessori students performed better on standardized tests in reading and math, engaged in more positive interaction on the playground, and showed more advanced social cognition and executive control than did their counterparts in more traditional settings; they also manifested more concern for justice (p.3). At the 6th grade level, the Montessori students were able to write more creative essays with more complex sentence structures than did the other 6th graders: they also provided more positive responses to social dilemmas, and felt more of a sense of community at school. These findings led the researchers to conclude that "Montessori education has a fundamentally different structure from traditional education. At least when strictly implemented, Montessori education fosters social and academic skills that are equal or superior to those fostered by a pool of other types of schools" (p. 4). In a further study, Lillard (2012) found that

children enrolled in schools in which the Montessori method was strictly implemented showed “significantly greater gains on a variety of outcome measure, ranging from executive function to vocabulary” (Bagby et al., 2014, p. 37) when compared to students in traditional schools or schools using adapted Montessori practices.

Another study comparing elementary students from Montessori and other schools was conducted by Besancon and Lubart (2008). This semi-longitudinal, 2 year study concerned the development of creativity. Their subjects were 210 1st through 4th grade students in 4 primary schools; 2 schools were traditional, 1 was Montessori, and 1 followed the Freinet method. The researchers utilized judges to evaluate children’s stories and drawings, they also administered divergent thinking tasks. Their findings indicated that the Montessori program was the only one associated with an overall increase in creativity for children of all initial creative ability levels

This research suggests there may be measurable cognitive/academic, social/behavioral, and creative benefits to elementary students who attend Montessori programs, however, another study (Lopata, Wallace, & Finn, 2005) involving the comparison of standardized test scores of Montessori and traditionally educated students had mixed results. In this study, the researchers compared the test scores of 543 fourth and eighth grade students from four different urban public schools; three were more traditional, one was a Montessori magnet school. Covariates were used in all analysis to control for demographic differences. In the fourth grade results, there were no significant differences between the students in the Montessori school and those in the other programs in language arts, although the Montessori students did score higher in math. In the eighth grade group, there was no significant difference in the math scores, but the Montessori students scored significantly lower in language arts. These findings led the researchers to conclude that “Although the Montessori approach is unique and may have benefits for both

teachers and students that extend beyond academics, the potential advantages should be demonstrated empirically before assumed as a positive outcome” (p. 13).

Ascertaining why the findings of these three studies are divergent is difficult, especially because there is no information about the authenticity of the Montessori schools in two of the studies, or the length of time the students who were tested had been in attendance in those schools (Lopata et al., 2005; Besancon & Lubart, 2008). These findings also focused on recent performance and do not indicate if there are any long term effects of a Montessori education. The exploratory, qualitative study undertaken here, focusing on former Montessori students now in college, illuminates what may be longer-lasting effects of the Montessori approach, and indicates directions for further research.

One study that does address possible long term effects (Dohrmann, Nishida, Gartner, & Grimm, 2007) compares two groups of students who graduated from public high schools in Milwaukee, WI between 1997 and 2000. One group was comprised of students who had participated in public Montessori programs from kindergarten through fifth grade, the other was a group of demographically matched students who attended the same high schools as the Montessori group. Considerable care was taken to assure a valid comparison group was obtained. Standardized test scores showed that Montessori students had significantly higher scores on math and science tests but no significant difference in tests for language and social studies or in overall grade point averages. The researchers nevertheless concluded that their study “supports the hypothesis that Montessori education has a positive long term impact on student achievement” (p. 215).

In their causal comparative study concerning student motivation and quality of experience in middle school, Rathunde and Csikszentmihalyi (2005) demographically matched

260 students from Montessori and traditional middle school programs. Multivariate analyses showed that Montessori students reported greater affect, potency, intrinsic motivation, and high salience (importance) while engaged in academic activities at school whereas the students in traditional environments reported higher salience and lower motivation in academic activities – results of both groups were similar when they were engaged in informal, non-academic activities. This research would seem to indicate that there are some measureable differences in the experiences of Montessori students and those in traditional environments in middle school as well as in the earlier grades. It further suggests that Montessori students may be more intrinsically motivated, and feel better about themselves than do students in more traditional programs. However, this study has yet to be replicated.

Though all the research explored thus far is concerned with students prior to their college years, it does give some credence to the premise that a Montessori education may offer students some long lasting benefits. Cauller (2011) bolsters this notion in his dissertation, as he argues that the Montessori Method of education “exemplifies an evolutionary epistemology” (p. 128) which he proposes as a model for educational reform. In his comparison of Montessori’s theory and materials to components of Karl Popper’s philosophy of human knowledge, he asserts that the Montessori Method meets the criteria Popper put forward for optimal learning, and that “an educational model for reform based on a combined Popperian/Montessorian perspective would best suggest how to conceptualize learning environments that cohere with and support the patterns and proclivities of human learning” (p. 151). His conclusions, however, are not based on the results of actual research.

This next study, which concerns student adjustment to higher education, begins to address how college students may be affected by their previous educational experiences.

Shankland, Genolini, Franca, Guelfi, and Ionescu (2010) conducted a longitudinal study which measured student adjustment to higher education. They noted that previous studies indicated that “specific teaching methods can enhance autonomy, self-efficacy, and the use of problem-focused coping strategies [and assist in fostering developing] autonomy, creative thinking and problem-solving skills” (p. 354) but were concerned about the methodological limitations of these studies. They designed their study using validated tools and interviews to address these limitations. They compared 50 students who had attended alternative schools (Steiner, Montessori, New School) to 80 students from more traditional programs. Baseline measures were taken at the end of high school and at the beginning and end of the first year of college. Their finding showed that students from alternative schools adjust better to higher education, report less anxiety and depression symptoms, and show greater life satisfaction and academic achievement. They concluded that “alternative school participants appear to have a significant advantage in adjusting to the demands of student life” (p.363).

Although the research is limited, it does indicate that there seem to be some positive long term effects of a Montessori education. However, we do not know much about how college students perceive these effects or if they relate to their epistemological maturity. This study to discover how former Montessori students describe their college experience, themselves and their learning suggests specific areas for further exploration and research.

Summary

In this chapter, I discussed constructive developmental theory in general and the developmental paradigms proposed by Perry, Kegan, and Montessori. I compared these theories, high-lighting areas of exploration concerning epistemological development and how epistemological maturity affects individual’s abilities to make difficult decisions necessary for

navigating modern adulthood, discovering areas of commonality. I then explored current research concerning Montessori outcomes, noting that there is only one study to date that looks into how students from non-traditional schools adjust to the college environment. I concluded with the premise that this qualitative study, exploring the perceptions of this group of former Montessori students completing their first years of college has contributed to our understanding about the possible positive, long-term effects of Montessori education, including epistemological implications, which need to be researched further. In Chapter 3, I discuss the method I used to conduct this research, and why it is appropriate to the research question.

Chapter III: Method

In this chapter, I describe the methodology I utilized to answer the primary research question: *How do undergraduate college students, most of whom were completing their freshman year, who were educated according to the Montessori Method during their early years, describe their experiences at college?*

The problem this study addressed is the lack of research on former Montessori students' perceptions about their learning experiences in college. A discussion of the epistemological assumptions, as well as reasons for the choice of methodology, is followed by the criteria for sample selection, data collection strategies, data analysis procedures, and steps taken to insure trustworthiness and transferability.

Epistemological Assumptions

My study focused on students' own perspectives of themselves, their learning, and their experiences, thus the constructivist approach is aligned with what I explored. Epistemology concerns our understanding of what constitutes knowledge and knowing. It also encompasses the relationship between knowledge and knowing and the process of learning. It also allowed me to take into account "the dynamic interplay between the individual and the social in epistemological development" (Baxter Magolda, 2002, p. 90), as well as Kegan's (1982) idea that meaning is created in the space between people and the events they experience.

"Constructivists study the multiple realities constructed by people and the implications of those constructions for their lives and interactions with others" (Patton, 2002, p. 96). Qualitative research within the constructivist paradigm allowed me to focus on understanding and reconstructing student's experiences from their own perspectives (Guba & Lincoln, 1994, p. 194), and to determine if and where individual reconstruction coalesces around consensus. It also

allowed me the flexibility to discover and consider questions and possibilities that emerged from the data, which were not necessarily directions of inquiry I had already determined to be of interest, which might have stemmed from the bias of my previous experiences.

Research Design

Qualitative research focuses on process, meaning and understanding (Merriam, 2009, p. 266). This qualitative, descriptive study sought to describe the meaning former Montessori students made while reflecting on their learning experiences and themselves as learners as they were completing their first years of college. “What people say and the descriptions of events observed remain the essence of qualitative inquiry” (Patton, 2002, p. 457), and I was interested in finding out what post-Montessori students had to say. By conducting open ended interviews, I invited participants to describe their perceptions; the dialogue which this approach engendered also created opportunities for me to challenge some of the perspectives I brought to this research, based on my long experience with Montessori Method. “Individual constructions,” Guba and Lincoln (1994) assert, “can be elicited and refined only through interaction between and among researcher and participants” (p. 111). Thus, an interpretive approach offered a richer opportunity for discovery than a probabilistic approach. Further, thematic analysis (Saldana, 2011) provided opportunities for unanticipated themes to emerge. This aspect of qualitative analysis was important for this study, as I wanted to discover possible commonalities among the post-Montessori college students; these had to emerge from the data, and could not have been anticipated.

Sample Selection

A purposeful sample of potential participants were recruited through email, Facebook, LinkedIn, and other social media, as well as from personal contact with Montessori teacher

training centers, schools, colleges, and colleagues, using the “snowball” or chain sampling method (Patton, 2002, p. 237). I intentionally avoided anyone who was a former student or with whom I had any previous contact.

Given my interest in epistemological development, I had hoped to identify especially “data-rich” participants through the use of a quantitative instrument—the Learning Environment Preference survey, developed by William Moore (1988) based on Perry’s (1968) study of epistemological development in college students. However, because only 13 students ultimately responded as willing to be interviewed, it was necessary to interview them all. Epistemological scores of all those who took the LEP, including those who were subsequently interviewed, are included in Appendix E, along with other demographic information collected.

Data Collection Strategy

Since the 13 participants were located throughout the United States and Europe, a personal interview lasting 60 to 90 minutes was conducted via Skype. The in-depth personal interview was chosen because this technique provides “fuller and more creative results” (Rubin & Rubin, 2005, p. 19). The semi-structured interview questions (Appendix A) were adapted from those used by Perry (1999) and Moore (1988). These Skype interviews were recorded using Call Graph, an application that allows for digital recording and storage; they were then transcribed by an individual with an Ed.D. in Educational Leadership, who is also familiar with Montessori terminology. Skype proved to be an unreliable vehicle for communication, and several of the interviews were interrupted multiple times. The data from most of one was lost entirely and the interview had to be completed again at a later date.

Data Analysis Procedures

“Qualitative analysis transforms data into findings” (Patton, 2002, p. 432), but there is no formula or recipe that specifically defines how this is to occur, thus it remains unique for each individual researcher, and involves learning not only about the phenomenon being studied but also about the researcher as she involves herself in the discovery process. “The human factor is the greatest strength and the fundamental weakness of qualitative inquiry and analysis” (p. 433). In qualitative research, data collection and analysis processes are integrative, iterative, and synergistic (p. 437), and there are many different possible ways to approach these processes.

Braun and Clark (2006) suggest that thematic analysis should be viewed as “a foundational method for qualitative analysis” (p. 78). It is a method which not only organizes and describes data in rich detail but also often contributes to interpretation. In reviewing transcripts, I had to explicitly consider how to constitute each theme or pattern and engage in “an ongoing reflexive dialogue...throughout the analytic process” (p. 82). Thus, I consistently documented my reflections on the themes that emerged from the data, which included articulating my process of constructing and reconstructing my inductive criteria. I also chose to identify themes at “the latent level” allowing for the identification and examination of “the underlying ideas, assumptions, and conceptions – and ideologies – that are theorized as shaping or informing the semantic content of the data” (p. 84). Therefore, I first isolated words and phrases used by the participants, as they said it, which seemed meaningful; I later sought to interpret deeper, underlying ideas.

My thematic analysis followed guidelines described by Braun and Clarke (2006, p. 86-93), which began by reading and rereading the transcripts and noting initial ideas directly on the transcripts. I systematically, manually coded interesting features that emerged from this familiarization process. Coding is a link between the transcript and the development of a

category or theme(Saldana, 2011). After coding, I organized the data into initial categories. To make the process as conscious and transparent as possible, I maintained a memo log to track the changes that occurred as I reevaluated the data. Writing memos is also a way to “construct analytical notes to explicate and fill out categories” (Charmaz, 2006, p. 72). As this process unfolded, some categories just seemed to suggest themselves; other initial categories were later deemed irrelevant.

Next, I wrote a summary of each transcript, bulleting all significant data points, as a way to help me organize the categories into overarching themes, and sub-themes, as well as to discover other possible relationships between the categories and the coded data. I followed an iterative process of generating themes, memoing, discussing the intermediate outcomes with my chairperson, and reevaluating the themes for coherence and explanatory power. I also ran the summaries through a computer program designed to map relationships among data to look for additional input. This visual representations of the relationships between categories offered additional insights. I then refined the names or titles of the themes and constructing a narrative, based on the data, which describes how former Montessori students describe their college experience. The process of constructing the narrative suggested changes in the thematic organization. This time, 12 categories emerged which eventually coalesced into 4 over-arching themes. These themes and categories became the essence of what is now Chapter 4. The full process of this analysis is documented in Appendix F.

Steps to Assure Trustworthiness and Transferability

Lincoln and Guba (1986) suggest that the term *credibility* can be utilized instead of *internal validity* in qualitative research, and that further substitutions can be made in the case of *transferability* for *external validity*; *dependability* for *reliability*; and *confirmability* for

objectivity (p. 76-77). They also propose that dependability, which means to systematically follow a step-by-step process, and authenticity, which requires being vigilant about the awareness of personal perspective and the perspectives of others, are valid criteria for judging qualitative studies. Braun and Clarke's (2006) guidelines for the step-by-step process of thematic analysis contributed to dependability (pp. 86-93). The memo log and personal dialogue journal, which are tools for documentation of the personal process the researcher undertakes during data analysis, helped create transparency that contributed to the trustworthiness of the analysis. The extensive time devoted to the constant revisiting and revision of the categories and themes, as well as a rewriting of Chapter 4 also contributed to trustworthiness.

However, "Because the researcher is the instrument of qualitative inquiry, the quality of the result depends heavily on the qualities of that human being" (Patton, 2002, p. 513). Patton suggests some techniques that "prepare the mind for insight while also enhancing the credibility of the resulting analysis" (2002, p. 553), including integrity in analysis, searching for alternative constructs and negative cases, review by inquiry participants, and keeping findings in context. I kept these suggestions in mind throughout the analytic process.

Integrity in analysis includes creating and evaluating different possible conclusions resulting from analyzing the data to insure that the analyst has not consciously or unconsciously shaped the data to point towards predispositions and biases. This close examination took place during the sorting and resorting of data, which occurred several times. I also searched for alternative constructs and those data that were contrary to the trends and patterns that appeared to be emerging. Because of the difficulty of re-contacting all the participants in a timely way, I was unable to include a "member check" review by inquiry participants, which would have allowed them to read and comment on my conclusions.

Summary

This chapter described descriptive, interpretive, qualitative research in relationship to the research question that guided this study, as well as the epistemological assumptions that inform the research. It discussed how a thematic data analysis technique was well suited to evaluating the qualitative data generated based on perceptions of former Montessori students at the end of their first years in college. I detailed the process of analysis with special attention to trustworthiness, authenticity, and other approaches designed to insure the quality and integrity of the analysis. In the following chapter, I discuss the qualitative data obtained by following this methodology.

Chapter IV: Findings

This chapter is comprised of the results of the process of repeated comparison and coding of the data collected from the Skype interviews with the 13 respondents. These interviews contain the responses of the participants to the research question: *How do undergraduate college students, most of whom were completing their freshman year, who were educated according to the Montessori Method during their early years, describe their experiences at college?* as well as what they shared when I explored these areas:

1. How do these students view themselves as learners?
2. What type of learning environment do they prefer?
3. What criteria do they use to make difficult decisions?
4. What meaning do they make of the possible influence of their prior Montessori experience?

I utilized the “snow ball” technique to identify possible participants who met the criteria for the study. These potential participants then took the LEP on line via Survey monkey. I had hoped to choose those participants who scored the highest on this measure to interview, however, it was necessary to interview all those who were willing to participate in the interview process in order to acquire 13 interviews. Even so, three of the participants were not college freshmen. Thus, the quantitative data acquired through the LEP did not prove relevant to this study. The chart of those scores and the participants’ demographic information is included in Appendix E.

The open ended interviews conducted on Skype took 60 to 90 minutes. Four open-ended questions encouraged participants to reflect on and reveal their experiences. I used thematic coding (Saldana, 2009) in this exploratory study, in order to discover possible commonalities among the perceptions of former Montessori students. This qualitative method allowed

unanticipated themes, possibly reflecting this commonality, to emerge. The purpose of this chapter is to describe the evolution of the coding categories, including a review of the process of data generation, reduction, and analysis; to discuss the emergent themes utilizing quotations from the transcripts; and to explore the meaning of the findings.

Review of the Process of Data Generation, Reduction, and Analysis

The coding process proceeded as follows: I read each of the interviews several times, first underlining aspects that struck me as meaningful or relevant to the research question. I then made marginal notes, often drawing directly from the words of the participants. The recursive, iterative process of analytical coding, memoing, and drafting resulted ultimately in 12 categories. The process is detailed in Appendix F. Quotes are *in vivo* expressions of categories.

1. College environment: “I love it”
2. Self-direction/self motivation: “I am in charge”
3. Meaningful learning: “Learning for the sake of learning”
4. Love of learning
5. Perception of knowledge
6. Truth and opinion
7. Values
8. Responsibility in relationship: “It’s not all about me”
9. Interest in multiple perspectives
10. Self in process
11. Finding a life path
12. Montessori influence

After several sorts of these categories, four overarching themes emerged:

1. How the participants experienced themselves as learners, comprised of categories 1-4.
2. The participants' reflections on how they know, think, and understand, comprised of categories 5-7.
3. The participants' experiences of past and present changes and expectations of future transformations comprised of 8-11.
4. How the participants related to their previous Montessori experiences, category 12, which stood on its own.

The twelve categories and how they related to the themes into which they were eventually included are elaborated on in the discussion that follows. The participants' own words are used to expand on the meaning of the categories. (All of the names associated with the participants are fictitious.)

Experience of Being Learners. This theme describes how the participants experienced themselves as learners including what they enjoyed, what motivated them, and what got in their way, as well as what characteristics they attributed to themselves as learners. Although there is some inevitable overlap between categories, each reveals aspects of their perceptions of themselves as learners, and gives us a better understanding of the post-Montessori college student.

College environment: "I love it." This category explores the participants' impressions of college and how they responded to what they encountered as they embarked on this stage of their formal learning experience. It reveals what aspects of college they enjoyed, as well as what things they found were disappointing or they felt were impediments to their learning. Overall, the participants were excited about their new learning opportunities and sought out classes they thought were interesting and professors who were thoroughly engaged in their subject areas.

In general, every participant found college to be enjoyable and valuable. Many commented on how the more varied methods of delivery of course content, as well as their own greater freedom to choose what they would study and how they would study it, had a positive impact on their learning. Kathy remarked,

I love college classes much more than high school. High school went fine for me, and I was successful, but the whole six classes, one right after another, really! I didn't like it because you'd be in one class, and you'd finally be getting interested, and you'd be getting information, and you'd be really figuring it out, and then the bell would ring, and it's time for the next class, and you have to completely change your set of minds...[I]n college, I love it. I have two classes every day. I had breaks in between them, so I had time to process the information that I had just learned[,]...so that method works a lot better for me.

Inez felt that college allowed her to expand and grow in new ways. She appreciated what she experienced as the overall higher expectations of students as well as the increased involvement of her peers. She felt such an environment really supported her as a learner and made it possible for her to manifest the kind of participation she wanted to see in herself.

[The college environment] is different, and so I'm able to do things to a greater extent, because there are higher standards and it is a more active, academically rigorous environment than in high school. I was able to dig into topics more, or had better discussions, because my classmates are also really engaged. So I think that the environment has allowed me to be the kind of learner that I'd like to be.

Kathy mentioned a particular experience that led her to rethink how students should be evaluated.

There was a point this year where [a friend] was stressing about finals or tests or something . . . and it really dawned on me that the tests really aren't that important...A test doesn't prove what you've learned in this class. It looks at a very select portion of the knowledge that the professor has deemed important and that you need to know...If you sat me down and asked me what I learned in world history I could tell you much more than I can show you on a piece of paper...I really wish that professors did more one-on-one discussions with students rather than tests.

Kathy also noticed parallels between her college experience and what she enjoyed in her earlier Montessori school, in that they both offered in-depth learning and were concerned with the interests of individual students.

[College is] much more Montessori-esque in the way that, when you asked a question, the professor typically would move the discussion or the lecture to what the students were interested in. There's a lot of times where we'll be just going through our normal modules and then we'll get really in-depth to some other area of psychology that's not even covered in our textbook. That is definitely much more Montessori-esque, as is going with what the student's interests are and really exploring those.

Inez echoed these feelings about the positive effects of the increased rigor and engagement present in the college environment. She elaborated on them to include her perception that a peer group of interested, engaged students was also a boon.

I really liked feeling challenged this first year into college... it was kind of a new experience. I felt bored in high school a lot... school wasn't super challenging... [T]he majority of people [at my college] really care about school and are really interested in being academic and taking academics to the next level and really engaging with learning... That was also not an experience that I had in high school, but it reminded me of my experiences in Montessori. I think it's [about] really delving into the topics... [I]t was really nice just to show up [at college] and automatically just meet people who were similar to me and just have a lot in common. I was able to identify with people, and after the first semester, I was so much closer to people that I'd met here than I was to people that I'd spent four years in high school with.

Ginnie also mentioned the importance of peers who had an interest in learning, and how she felt that college supported individuals who wanted to learn.

College is probably the best thing that ever happened to me...it's nice to finally find a place where I one-hundred percent fit in and I feel like I'm going to be supported for learning and for striving to be someone that is good at learning. Because a lot of times, in high school, that wasn't necessarily encouraged by your peers and...it's just one of the most supportive environments I've ever been in.

The participants also described confusion surrounding those of their peers who didn't seem to want to be fully engaged in what college had to offer. Debbie said the following when she discussed students not paying attention to the professor and being disrespectful in class:

I found myself sitting in the front row,--I think I was three feet away from the professor—and I couldn't hear what she was saying. And I said, "I can't hear because everyone's talking. I mean, they [the professors] are really here for us for a specific purpose and it's really confusing to me that people aren't really ready to take advantage of that.

The preceding comments were made by students who had attended a public or traditional private high school prior to attending college; those who had attended Montessori high schools tended to have a somewhat different perspective. Fiona, for example, said:

Most of my college experiences have been really positive. I think, if there's anything negative, it would be that there's kind of a culture change. As opposed to learning for learning's sake, there's a lot more of learning for a grade... [I]t's just a culture shift that's been an interesting, and a kind of difficult, transition. But it's not too negative. It's just not as wonderful or nice as learning with other people who just want to learn.

Some participants also discussed aspects of college that they felt did not add to their learning experience. Ginnie said, "busy work is something that does not work for me...neither do classes that are very lecture oriented This was a prevalent perspective; several students preferred options that allowed them to participate fully in discussions with peers and professors and work on projects.

Ginnie also had some very positive feelings about her college experiences. She appreciated the level of commitment that her professors had to their subjects and their enthusiasm for what they were sharing with their classes.

I have had some amazing professors...[I]t's about learning about subjects that the person that is teaching you is really invested in...[T]hese are things they dedicated their lives to and jobs to, you can just tell! When a teacher is passionate about the subject, it makes the student more passionate, and I haven't had teacher yet who wasn't passionate about their subject.

The qualities that participants appreciated in teachers came up several times. In general, these students were looking for more collegial relationships with their professors, and guidance rather

than directives. They also felt comfortable with constructive criticism. Inez was very clear about feedback that did and didn't work for her.

I don't like teachers or coaches who candy coat things or are always trying to put out the positives. If I just did really bad on this project or this piece of music or whatever, then tell me that it was really bad... That's the kind of kind of teaching or style that works really well with me.

Overall, the students had generally positive college experiences, thus far. They enjoyed the rigor and challenge offered to them, as well as a larger group of peers who were interested in learning. They found that professors who were passionate were particularly engaging, and appreciated honest feedback about their work. However, they preferred classes that were not totally lecture based, where they could learn for learning sake, as opposed to for a grade. They were happiest when they were not expected to do "busy work", and could be evaluated in ways other than tests. Part of why participants enjoyed their college experience was because it offered them an environment where they could be self directed and self motivated.

Self-direction and self motivation: "I am in charge." In this category, participants described the ways they felt responsible for, took charge of, and determined the direction of their learning. They believed they took responsibility for their process of learning and for the results that occurred as a result of that process. They also were motivated by their own interests and desire to succeed rather than by external rewards or punishments. In fact, things like test scores and rankings were felt to be counter-productive by many of the participants.

Bob explained his path as a learner framed in relationship to his prior Montessori experience. For him, the freedom to choose subject matter and direction was a key to nurturing his self motivation and enjoyment of learning.

In Montessori, its "work at your own pace, explore what you want to explore," and I absolutely loved that. I don't even think I thought it was schooling or work or anything

at all, and that was the same in college...I keep going back to the fact where they let you become the teacher and where they let you pick where you want to go with things. And then, it's up to you and your love of the subject, your love of education and learning, to go after it and find out about the subject.

He preferred support and guidance from his teachers rather than specific directions. He enjoyed the autonomy this approach allowed him in his educational choices, but valued the resources and advice his professors could offer him as he steered his own course.

And then, when you do [choose], it's the teachers or professors that are back there again, helping you with any questions you're going to have or any further research...[T]hey're more there to help you along the way rather than to tell you what to do. They're there to guide you, I suppose.

Ginnie was very clear about her desire for self-direction. "I like my education to be something that I am in charge of and that I am in control of and that I do for myself" was one of the first things she mentioned in her interview. Inez also talked about the importance of self discipline and of "holding myself to a higher standard...I think that's something I picked up on really strongly in my middle school, my Montessori school" she added. Bob said he saw himself as one of his teachers, as being responsible for making sure he got everything he could out of the college experience. He mentioned that in college, as in his earlier Montessori schooling, "you kind of are back to – you know, you are on your own...Do what you need to do and what you have a love for, for education purposes" he extorted, "to prove yourself, or to prove to yourself this is what you want to do and go for it

Many participants had techniques and processes they developed to help themselves be more successful at acquiring knowledge, as well as making it a resource they could use for other purposes, such as applying to other situations on their own. Debbie described the elaborate strategy she developed that helped her process, memorize, and understand information.

I really need to interact with the material, and so when I study for tests, I read through the whole text, just reading. I just read through really slowly, and try to get as much out of it as I can, and then I try and take notes, and I go back and I look for what's important and I write it down. And after I take notes, I do the flashcard thing, and I ask myself questions...[T]hat's what I do just because I really want to do it myself.

In addition to taking ownership of her learning process, she also revealed awareness of her own learning style, and did what she needed to make it work for her.

Another aspect of self direction and self motivation is reflected in Cassie's statements about being compared to others, which she found counterproductive to her learning in high school.

I rarely ever compare myself to others. I think that was something I certainly struggled with [earlier], my individualism. So I would say that I am [now] much more confident in my ability, and . . .the way that I do things, rather than seeking out how everybody else is doing

These students were tenacious even in the face of failure, and used disappointments as motivation for continuing to try and to deduce what might lead to success in the future. For example, Kathy observed:

When I get a poor result or a poor grade...initially I don't want to look at it, but then, I mainly get that I need to master the skills. I need to be better, so that the next time, I'll have more success. That's my mentality.

Ben also viewed failure as an opportunity to learn and do better next time.

I always say, "You learn from your mistakes"... I've made a good majority of mistakes in my life and I feel I've learned from that...[W]hen you get that mistake, you revert to the path and then take a different one to try and see "where did I go wrong?" and "where can I better myself and get to the end result that I'm looking for?"

Elsa also went through some life struggles that impacted her participation in school. She describes how she learned from one of these:

This semester, my brother had a cardiac arrest and he was dead for an hour. That was in the middle of the semester and it took a chunk out of my grades...But, overall, even though it was a low point, it gave me a new kind of motivation. . . .I don't want to feel

like that again and [even though] it wasn't necessarily related to me, I could have handled it better... The low points really helped me remember what matters, cause sometimes I forget... I try not to waste the bad experiences.

Most participants desired high levels of self direction. They mentioned that freedom to choose, a feeling of autonomy, a lack of comparison to others, and guidance and support rather than directives from the adults all served to nurture their self-motivation toward learning. They also found that adversity in a variety of forms could motivate rather than detract.

Meaningful learning: "Learning for the sake of learning." This category consists factors that contributed to or detracted from what the students considered to be meaningful, or in-depth, learning. In general, they found that classes that allowed for multiple ways to interact with the material, including opportunities for hands on, project-based learning, group discussion, and in-depth exploration, as well as open time frames and interconnected, interdisciplinary subject matter, nurtured meaningful learning. Lectures, tests, "busy work", etc. they found counterproductive. This overlaps with their interpretation of what worked and didn't work for them in their college experience, as they enjoyed and commented positively about the meaningful learning experiences college afforded them.

For Ginnie, the classes she enjoyed most and learned the most from had a large discussion-based component and project-based learning. She noted that this was something that some of her college classes had in common with her previous educational experiences in Montessori schools.

I'd say the biggest similarity between my college experience and my Montessori experience was discussion-based learning... The teacher would guide the discussion, but it really was between me and my classmates. That is what I really loved most about Montessori... It was a lot of talking with other student about subjects, and really being given the chance to formulate opinions based on discussions, and [also] on the opinions of your teachers that you were able to hear through discussions, or the opinions of your peers that you were able to hear through discussion. That's the type of learning that

registers well with me... What helps most, is when I get to take what I've learned and go do a project and go be given a chance to explore other parts of the subject. That's how I've learned more in depth... I love doing cross-subjects, and presentations, and writing.

Inez's mention of "cross-subject" was how she described interdisciplinary projects,. For her, these led to a deeper level of engagement. She also emphasized that she needed a "hands on" approach.

If you're talking to me about a method or a model or something like that, I like to be able to try it out myself right away. Instead of just seeing examples or hearing examples, I really like going through the motions myself. That's how I grasp things best. I get really very engaged with topics that we're talking about when it's a bigger project or bigger essay. I'll do a lot of background reading and a lot of research for bigger assignments, to really get a big notion of the topic. I really like interdisciplinary applications of things. I love when my classes overlap...or when I can apply things from one class to another class.

In the same vein, Fiona talked about what she called "connections":

My favorite part about learning is when you have crossover points between disciplines. I think Montessori's really, really good at that-- coordinating lessons--so that a math lesson can relate to world history at the same time that it's relating to what's going on in your English class...[A]ll those connections are my favorite things. I think at college I've been able to try and recreate that...to create some crossover in a way that excites my mind... I think I've become more empowered because that crossover isn't naturally embedded into the curriculum here. I've been more empowered to make those connections myself...I think that having all those connections [Montessori] in high school...and then, for the first little bit of college, seeing that the absence of those connections, made me want to make those connections [for myself].

She also commented about classes that she did not regard as favorably.

The classes that I've enjoyed the least and have not gotten anything really important out of would be those where it's just lecture and there's like nothing going on the board or no instigation of discussion amongst students...I've had classes where essentially the lecturer [is] regurgitating what we just read in our books...I think I learned things in those classes, but I don't think it was any deep or meaningful learning that will last.

For Helen, testing interfered with a deeper understanding of and interaction with the material.

I feel like I pay a lot more attention to what I know is going to be on the test, than if I just had a chance to learn what I wanted to about the subject. I feel like if we just had classes where we got to go to lecture, and there was just homework, and there weren't any tests, I

feel like I would probably learn better. Because I'd be able to look at other stuff and see how it all connects, as opposed to right now, where a lot of the time ends up just memorizing what I need to know because tests are really stressful.

Ginnie felt that she learned a lot in college because it allowed her the opportunity for more in-depth exploration than she had experienced in high school. She also had some interesting comparisons between Montessori, public high school, and college which made it clear how important in-depth learning was to her, and what kinds of situations she found nurtured that kind of learning. She also perceived that some forms of pressure or stress seemed to have a more positive effect on her than did others.

I have learned more in my year at college than in four years of high school. And, I think what I'm learning [here] to me is so much more valuable, because I'm learning it in-depthly, rather than [how it was] in high school... Learning has changed from a task, and something that I just need to do to get that good grade, to something that I actually look forward to doing about eighty percent of the time. So, I approach it with a more positive attitude and therefore get out of it more than just in GPA – which is probably all it was to me in high school...

I went to Montessori between pre-school and 8th grade, and then moved to a public high school in 9th grade. In Montessori, in my 7th and 8th grade years, I remember being stressed out a lot, because it was a lot of work, and what we were learning was really dense. There was a lot expected of us. It's funny, because it wasn't the same kind of stress as high school was. It was more of like I really wanted to accomplish these goals and therefore I would stress out about them. But, I remember, once I finished making a poster, or our student business had raised enough money for us to go on our end of the year trip, it was a more like a wholesome stress, in a way that would be like rewarding to me, and honestly, I think I was, in general, a happy person in Montessori.

When I went on to high school, all of a sudden, learning became about following the system, being part of the system, and then being at the top of the system. And, so it turned more from a personal goal into a competition between others - a competition to get that high numbered grade, or to be at the top of the class. That was another type of stress, and I don't think it was a type of stress that resulted in personal gain...Then, in college, I finally learned how to create the balance between not over-working myself and enjoying being with friends and enjoying education and realizing that it wasn't about a grade or a number, it was about what I got out of it.

It appears that the introduction, in 9th grade, of competition for a grade and class standing, had an adverse affect on her ability to learn for the sake of learning and her ability to personally benefit

from her educational experience.

In general, participants found that college afforded them the opportunity to study material in depth, and to explore ideas and topics in multiple ways. Those who had participated in a Montessori high school appeared to be disappointed in the focus on grades and competition when they encountered it, whereas those who had attended more traditional high schools appreciated the opportunity to have more input concerning where they focused their attention. Most found that grades, competition, tests, and lecture-based courses detracted from their ability to learn in depth, and preferred a varied, open-ended, hands-on approach, where they could take responsibility for their learning. They also mentioned how much they loved learning in general.

Love of learning: “It’s in human nature to want to learn.” The findings in this category relate directly to the participants self reported love of learning, which, for them, appeared to be linked to freedom to choose, which, in turn, increased their level of self-motivation. All these elements appear to be inter-related and entwined with one another. When the participants were allowed to be more self directed and given more freedom to choose what they studied, they experienced more enjoyment of learning and the learning process. Many participants spoke about learning as Inez did; “You know, I really like learning, I like being engaged

Bob spoke passionately about “just wanting to learn and wanting to better yourself”, and felt responsible for his own learning: “It’s up to you and your love of the subject, your love of education and learning to go after it He saw the need to know and learn as an integral part of being a person, of human nature.

Pete saw a connection between being free to choose as a Montessori student and the increased freedom in college. He saw this freedom and self direction as a motivating factor that helped make the learning and the material interesting and enjoyable.

Montessori gave me an approach to learning – “I’m going to go in and actually appreciate material for its own merits”, as opposed to... “I have to read this”. I still have to do the work, but I can appreciate the materials – “Hey, this is actually interesting”. It’s not just a task that’s set in front of me...you do the material that interests you...in college it’s been sort of self-directed - “okay, you write what interests you, you research what interests you”. That’s funny, because Montessori is all about that. So, in Montessori, that was definitely present. In high school, that was much less present. It’s like “Here’s the material, you have to do it”. And in college, it’s much more...research whatever you find interesting...they do give you a lot more freedom to just do what you want.

Although Fiona doesn’t mention love of learning directly, her enjoyment of choosing different subjects to study makes it clear that she is enjoying her educational experience in college.

College has been a really great educational experience...just a lot of the choice that you have. We have the quarter system, so that means you get to take a third more classes than students at a semester system, so I’ve had the opportunity to exercise choice in taking cool, interesting classes, and kind of...dipping my toe in lots of different disciplines.

Nathan also was glad to have the opportunity to try out a lot of different possibilities, and the idea that he might discover something new that appealed to him was exciting and motivating.

I have enjoyed it [his educational experience] because there is a huge variety of anything I could take. And the fact that I don’t know what I want to do yet, is kind of pushing me into trying all these different classes, in different areas, just to see if there’s anything... which I have been loving so far...I really like that we can pick our own schedule exactly how we want it... It’s exciting to go to class and listen.

Elsa noticed that the classes that interested her had commonalities, which excited her, and brought her to the realization that she was enjoying learning.

It was just this crazy moment that I just got so excited, because I realized that all of my classes overlapped...I was in all these different classes...and I realized, at some point, I had chosen classes that sounded really interesting to me and they all shared some aspects. It was just like everything interconnected. That moment was so cool - that was the first

time that I realized I loved all my classes and that I was really interested in what I was doing.

Mary expressed a similar experience and also tied this love of learning to self-motivation.

I feel like college brought me back to when I was in Montessori and taught me how to love learning again. I feel like I'm a lot more self-motivated now, to actually do things. I'm not doing it because my professor expects me to, or because my parents want me to; I'm just doing it because I want to.

Mary connected her love of learning to the fact that she had determined her area of interest, which increased her motivation and enjoyment of learning.

I really enjoy my professors, but it's also just what I'm studying...I just really love learning about it. I have a passion for learning about this. It's really interesting to me and I really enjoy it and...when I'm taking classes for my major, I really enjoy spending time in the classroom...I feel like I'm learning because I want to and because I enjoy it.

Love of learning was something that permeated the responses of all the participants.

Many of them saw a connection between this and the freedom to pursue their own interests. This combination allowed them to be self-motivated in their learning. Some, however, were just excited by the opportunity to explore a variety of subjects to discover new possibilities for expressing their talents.

Reflections on Knowledge, Beliefs, and Opinions. In the course of the interviews, the participants discussed their personal understanding of knowledge, truth, beliefs, and opinions and reflected on how they had come to their current positions. They mentioned how being exposed to multiple perspectives allowed them to grow and to expand and tailor their world view to include information and positions they had absorbed from others. The categories "Interest in multiple perspectives", "Perceptions of knowledge", and "Truth and opinion" make up this theme.

Interest in multiple perspectives. This category addresses the participants' openness to the possibility that their views could change, that they did not necessarily have all the right answers, and that being exposed to differing ideas and opinions allowed them to grow. Many expressed not just an openness, but a real enjoyment of the process of expanding their horizons.

When discussing coming into contact with others who believed differently than she, Kathy mentioned that she really enjoyed it when the opportunity arose to reexamine her perspectives, although she felt her own point of view was very compelling.

I think my beliefs and perspectives are the right ones, but through anything, I love it when someone can make me question my belief or my perspective, or bring a new piece of information--because there are other people that have very valid opinions that are very different from mine that I might not believe in. There are [also] people who have very valid opinions that are very similar to mine. When I learn more about [their opinions], maybe mine will move more [toward] theirs and theirs to[ward] mine. Being able to have an actual discussion of an issue with someone who has a similar understanding of the topic, but maybe a different take on it, that's my favorite thing, being able to do that. Obviously I think my beliefs and perspectives are important and valid, but I can understand that other people's are as well.

Helen found that her friends were useful in helping her expand her perspective, and she valued this aspect of friendship.

I still don't like being wrong, but I am definitely more open to the idea that mine is not the only right answer...[Y]our friends help you see the world a way that you won't see if you always just stick to your own view...[T]hat's one of the greatest benefits of having friends is having someone who's willing to sit there and say, "Well, I think you may be wrong about this one."

Bob had a similar perspective. He really enjoyed the opportunity to air his views with others who would not feel pressured to change their ideas because of what he had to say.

With my friends, we actually get into big debates...where we talk about issues...The thing I love about my close friends is that...they're going to say what they're thinking no matter what...[T]hat's something that I respect my friends for...[T]hat leads to...wanting to learn and wanting to just better yourself.

Rather than being threatened, Bob perceived that these opportunities to debate helped him to

learn and to become more aware. Helen took this a step further. She discovered that when someone challenged her perspective, it gave her the opportunity to reflect on her own positions and the processes she used to arrive at them. When asked the question, “How do you feel if someone challenges your perspective or tries to convince you to look at things a different way?” she responded as follows:

I actually really like that, because it encourages me to maybe step outside what I've been doing and look at it myself. Because sometimes you do get stuck in your own way of thinking. [An] outside influence...definitely helps you to take a step back and look at your decisions. So I like it when someone says, "well, no," and then explains to me why they think I might not be doing it right.

In general, the participants really appreciated frank and honest feedback concerning their opinions, perceptions, actions, and beliefs. Rather than being threatened or angered, they looked on such occasions as opportunities to learn more about themselves and others. Bob summed this up as follows:

The thing with my peer group... [is] we come from all different walks of life and when we do come together, we do all have different opinions...I'll listen to other people's opinions and thoughts and what they think...I'll take it as a chance to better myself and to understand why they have those opinions, and what made them think that...and become more educated because of what they were saying. Just because something was different, it's not wrong.

The participants enjoyed interacting with others who had different perspectives. They felt that being exposed to other ways of looking at things allowed them to grow and they looked forward to these opportunities. Some of them were able to use their glimpses through others' lenses as opportunities for self-reflection and for expanding their understanding about other peoples' motivations and ways of thinking. Opportunities to know different ways of perceiving the world were seen as ways to enhance themselves, to develop into more complex people. They realized that there were many ways of understanding that could be considered “right”.

Perception of knowledge and truth. The participants were specifically asked to give their definitions of knowledge, and to talk about it in terms of their educational experiences. What is notable about their definitions is that they appear to have engaged in metacognition, and to have perceived, to some degree, that knowledge is constructed. It also appears that they have begun to form ideas about their own epistemological development, though they would not use that language. Their perception of the nature of knowledge and how it relates to their definition of truth offers insight into how they are interpreting the new knowledge they are being exposed to, and indicates they have begun to apply it to their understanding of the world and themselves.

According to Elsa,

[Knowledge] is experiences and information. It's got to be a combination of those two. Because you can have all the information in the world, you can read all the books you want, and you won't *necessarily* have knowledge. And the opposite is true. You can have all the experiences in the world, but you won't necessarily have knowledge if you don't *understand* it, if you don't have any information behind [that]. If you can put information and experiences together, that's how you get knowledge.

Helen formed a distinction between knowledge and wisdom, seeing wisdom as something that develops through using knowledge in a situation other than the one in which it was acquired. Her way of viewing her knowledge, hints at a process of metacognition.

I feel like knowledge and wisdom are two separate things. Knowledge is how *much* you know--all the facts and how well you can link it up together and how well you understand it,--and then wisdom is how you *view* your knowledge. You have all the facts, and you know how they all link up, but can you apply it to something *else*? I feel *that* is wisdom, where you can use your knowledge. If you just stuff a bunch of facts in your head, you'll be really knowledgeable, but you may not be able to use it.

Cassie also described a relationship between knowledge and wisdom. She talked about how what we know influences how we act towards others, and that challenging our set beliefs can lead to growth in our knowledge. This suggests an awareness of the process of the development of knowledge and a connection between knowledge and learning and development.

I think knowledge significantly affects the way that you act and conduct yourself. And I think the more that we experience, the more that we push ourselves outside of our comfort zone, the greater our knowledge is...I could almost say that wisdom is an extreme form of knowledge, a *great* form of knowledge. I hope that knowledge is always increasing - the older that we get, the more knowledge we have on matters – [but] that’s only if we challenge ourselves.

Ben was aware of different kinds of knowledge, including what he called “social knowledge”, which he believed helped him better understand differences between individuals.

Everything you encounter in the world *is* knowledge...I think it’s in human nature to want to learn...not necessarily just education to learn, but to learn how to take care of yourself. Learn how to grow up, speak, eat, dress yourself...it’s in human nature to learn in order to survive...[W]hen you’re in college you have to get all kinds, not just academic knowledge or education knowledge, but also social knowledge. All these different aspects are coming together to help you survive. Learning the way people socialize, different etiquette. It’s interesting to see...where people are at certain stages and then take that into account...I don’t think you can limit knowledge by saying it’s academically speaking “knowledge,” or “you’re smart because you have this much knowledge”...[A]nything that you learn is still knowledge, you’re still learning, you’re still opening your mind.

Debbie took things one step further, revealing that she perceived that knowledge is contextual and relative.

Knowledge is information and it is... to some extent, what people agree on, but...it encompasses knowing things that are in the past...[W]hen you go to class and you learn things and you gain knowledge...sometimes [the knowledge you gain is] not in the classroom, or sometimes [it’s] just in life [even] when you are in college...Maybe you gain more wisdom, more so about life, or about yourself, and I think that’s still some sort of knowledge...[I]t’s a different kind of fact...I think there are questions you can ask yourself, [for instance], if things are true to your beliefs. But I think that when you get back into something that is as gray as beliefs and other such things, truth becomes really relative.

Kathy also saw knowledge as contextual, and added that she understood that people create knowledge.

Right now, in our society...we look at only one aspect of it [knowledge]. We look at what text books say, what GPAs are...the very classic, “I understand this. I can do this calculus problem. I can write an essay on this topic”. But knowledge expands so much more than that; there’s life experiences, understanding culture, understanding people,

understanding yourself. Being able to have a good understanding of yourself is a whole different knowledge: what you have to do to make yourself happy, how you can make other people happy, how you can be successful in life. All of those things are important to knowledge.

Nathan's perception of knowledge is quite similar to Kathy's, although he added the importance of critical thinking and problem solving to his understanding of what knowledge is and how it is used.

Knowledge [is] the combination of being book smart... [and] also having an understanding of real world situations and...critical thinking... [That's] being able to really take apart a problem and identify things about it, understanding what goes into a situation, and the reasoning behind what people are doing and why.

For Fiona, knowledge involved knowing the facts, but also being aware of different perspectives, "to the point that you feel confident enough that you can make your own ideas". This hints that she may have an awareness that people are involved in creating knowledge, and that there is a mutual agreement amongst people about what knowledge is. She suggests that, in contrast to truth, "Knowledge is more a constructed thing, for society".

Inez sums this all up pretty succinctly, and adds the perspective that knowledge evolves over time.

Knowledge is information...If you are knowledgeable about a topic, you understand [it] from multiple perspectives...It's multi-faceted, and it's not just, "here are the facts: x,y,z". If you really have knowledge of an issue, then you would understand people's opinions about it...Having true knowledge of something is seeing it from all angles, and knowing the background information, and what will go into people's decisions when they're in a situation regarding the topic of knowledge.

She shared an instance of how she sees knowledge evolving by referring to her past Montessori experience.

When I got a bit older, I saw all the connections [as to] how much you were introduced to ideas when you are little and then understand those ideas more thoroughly when you are older...[For example,] there's [a Montessori material] that's cube blocks and so, when you're little, you're just like figuring out how to fit them all into a box, but when you're

in maybe 4th or 5th grade, you understand that, “oh, three cubed is nine” and...you understand the mathematical importance of how you fit them into the box. I think that’s really symbolic of how knowledge or learning evolves throughout your life.

The participants were then asked about their perceptions about the relationship between their understanding of knowledge and their understanding of truth. The following transcript excerpts help create a bridge between the categories “Perception of knowledge” and “Truth and opinion”. These findings reveal that the participants were able to be reflective in their thinking about these topics, and perceived that both knowledge and truth are relative and personal.

Mary saw the comparison between knowledge and truth as follows:

Knowledge is knowing all the points of view, knowing as much as you can, and truth is more what you personally believe, or what you hold to be important. But I feel like I can’t really have truth without knowledge.

Inez also saw truth as being influenced by knowledge, but colored by personal perspective. To her, both knowledge and truth were relative.

I think that knowledge informs truth...People can believe in truth that has no basis in reality. Because they’ve gained knowledge through their different life experiences... truth for one person isn’t going to be truth for another person. Because knowledge doesn’t just come from books and studies in academia, it often comes from life experiences and personal undertakings and...what a person individually thinks about something. So, I would say that knowledge informs truth, but not everybody’s going to have the same knowledge ...and not everybody’s going to have the same truth.

Ginnie also saw this relativity, and although she was not certain, she appeared to see both truth and knowledge as being mutable.

I think that some knowledge leads to truth, but I don't think that all of it does, because I still haven't quite figured out what I believe to be truth...I'm not sure if I believe there's something like an absolute truth in anything, because knowledge is always changing and we're always gaining new knowledge, and sometimes things that we believe to be true change. So, I would say knowledge tends to lead to temporary truth, if there is such a thing, but I also think knowledge takes away from truth and proves some truths false.

The students’ responses to questions about knowledge and truth were complex and

implied a level of awareness about the constructed nature of knowledge, and how the acquisition and construction of knowledge contributes to the growth of an individual's perception of the world. The participants appeared to be exploring the nature of knowledge and how they might be participating in its acquisition and creation. Their comparisons also suggest their sense of the contextual nature of both, and an understanding that truth and knowledge can be viewed from different perspectives.

Truth and opinion. In response to the request to explain the relationship between their definitions of knowledge and truth, the participants revealed a variety of levels of understanding. They span the distance from a belief that there are absolute truths (but because human understanding is imperfect, we will be unable to discover all those truths), through different degrees of relativism, to beginning to choose their own truths, knowing that these may quite possibly change over time. The following quotes are arranged in what I estimated to be increasing levels of complexity.

Although Pete felt there could be more than one right answer, he did feel that there was some kind of objective truth.

In general, there's usually more than one correct answer to a question. However, that doesn't mean that truth is subjective, that there's no right answer. There's layers of human understanding. And so, there is one right answer to every question. However, we probably don't know what it is. So, there're going to be multiple right interpretations of that objectively right answer, and...so, there are probably multiple answers, too.

Most participants, however, looked at truth as relative, believing there were many different interpretations of the truth, some of which were not much more than subjective opinions. As Lois declared:

I don't think there's any absolutes. I think everybody has their own opinions, so no matter what you say, there's never going to be that one thing that everybody's going to believe, that is right or wrong. There's always going to be somebody saying, "Well, no, I

don't think that that's correct". And I wouldn't say there would be anything that would be straight-forward yes or no.

Nathan had a similar perspective on this, but more clearly articulated his understanding of this multiplicity, of the spectrum of perceptions that exist and why they occur.

I think that there are different opinions that can very well be true, just because different things apply differently to different people. So... [even] if there was a situation that affected me personally, and I thought something, and for me there was only one opinion of mine that was true for this thing, it could be affecting somebody else in a completely different way. They could have an entirely different, completely opposite opinion, that could be also perfectly true for them. It's never just black and white; there's always shades of grey. So, I would say there's never just one true opinion. There's never just one right answer.

Inez agreed that there is always more than one right answer, and went further to expound about the relativity of truth. "I definitely don't think there's a transcendental truth in any situation...I don't think there's a universal right or wrong, or a universal true or false thing. Everything's more complicated than that". Fiona seemed to appreciate this notion of relativism as she stated, "I definitely like the post-modern kind of ideas of lots of truths, and that a lot of things can be right at the same time, even if they seem to be kind of conflicting".

Ben had a unique perspective on truth that didn't fit into the patterns just described, but that revealed an understanding that he, himself, was a source of knowledge, a source that could be trusted. It also suggests he is starting to recognize a connection between learning and development.

Truth is kind of a freedom within yourself. You're being truthful to yourself and allowing yourself to develop in any atmosphere or environment or aspect... [I]f you're truthful to yourself, then I feel you can fully develop and you can fully comprehend certain things. But if you're not truthful to yourself, you're denying certain aspects... [T]hat's when you become skeptical...or ignorant...or you just don't understand things...[I]f you don't have truth within yourself, or you don't believe what is truthful, then you're limiting yourself...you're lying to yourself about part of your personality...[Y]ou're not able to be open to knowledge that that person, that part of your personality, has.

The last few participants seemed to be in a position where they were beginning to attempt to determine what truths or opinions were more true or correct, beyond relativism. Kathy believed that how decisions or perspectives impacted others was an important criterion to consider when deciding what is true or right and what action to take.

I think it's important when you look at opinions [concerning] social issues, [to consider] whether it's hurting other people. Looking at something greater than yourself--even if you disagree with something, are you preventing other people from being happy by having this opinion? Looking at the pros and cons--how does this issue impact your life? How does it impact somebody else's life? So I think, especially when making decisions, it's really important to look at more than yourself, and more than your personal biases or personal beliefs.

For her, what would make something more right, or truer, would be if it was less harmful or more positive, that it contributed to the greater good. She was also concerned with transparency, and with an informed public. She thought it was important to insure that any decision

can be clearly justified, that there's information about it, so that the general public can see why the decision's being made - so everyone can have an understanding... I think it really helps, not that there's a right or wrong decision, but typically better decisions are [fully explained]. Even if somebody disagrees with it, if they can read the reasoning and understand why it was made, then I'd see that as a right decision, and even the people that are most against it can have an understanding... And truth, it's an interesting thought, because a lot of people use: be true to yourself, be true to your country. Then [I think] "what is the truth"? And, once again, it changes by perspective.

Clearly, she saw truth as relative, complex, and contextual. She talked about how some of those who committed atrocities during the holocaust were swayed by propaganda and how easy it is for a population to be manipulated. She continued:

It's not that simple and truth isn't that simple. Because their truth was that they were doing the right thing. Truth changes from person to person, and I think that ties into knowledge, because knowledge makes you question, *what is the truth?* What is the truth behind this issue? What is the truth to our history? I think knowledge ties into truth because it makes you question it, as well. The purpose, I think, of knowledge, is finding truths, and finding truths of our world and of our history and of cultures.

Inez also seemed to be in the process of deciding what priorities were most important to her in evaluating whether something was right or true. She seemed to be comfortable with the paradox of dichotomies and saw possibilities for including multiple perspectives into her own.

I don't necessarily think of right and wrong as being exclusive of each other. But when you think there's a right answer to a question, and then you think something *all* the way on the *other end* of it, that doesn't mean it's wrong, in opposition to the right...I think, in addition to that, there's a spectrum throughout the middle, and all those things in the middle can be incorporated into either point of view...I guess the type of thing you have to prioritize is in evaluating the effect of the action. So, in evaluating any kind of political action, I would definitely take the social effects into account more – how many people got hurt, and did we hurt more people in undertaking that action than would have been hurt if we didn't?... [W]hen people prioritize a fiscal problem over a social well-being problem, I would think of their opinion as being more wrong, because I don't agree with it. But that's not to say that it's unfounded.

It appears that Inez has begun to find a balance between her perceptions and those of society, and to find a way to be true to herself, while understanding the perspectives of others. As the participants grappled with these questions about truth, opinion, and how to make decisions about difficult issues, their developing values began to be revealed.

Values. This category contains findings concerning what the participants perceived to be their values, whether they had consciously constructed or unconsciously adopted them, and how they had used them in the process of making difficult decisions. It appears that in many cases, the values are not absolute, and depend on context. A majority did not feel comfortable imposing their values on others, but felt strongly about living up to them, themselves. They attributed their values, in part, to their parents, their Montessori environments, and to what they had absorbed from friends and their culture. However, they also felt that they had examined what they inherited and absorbed and were in the process of constructing their own values as they grew. Some values that the participants had in common included empathy; the Golden

Rule; do no harm; avoid confrontation, but stand up for your beliefs; find common ground; grow; and do what you love.

Inez's statement about where her values came from is quite typical of a majority of the participants.

I think there are a lot of similarities with how my parents would think about it [values] - my parents and I tend to agree, but I think that there's also points where we do disagree - some of both. Maybe 75 percent or so [of her values] are what I've grown up with, but I've definitely also taken that and made my own individual opinions about things.

Debbie's perceived her parents' influence on her values, but saw other influences as well.

I would say that the values that I have, they've definitely been shaped by my experience as a person, and my life, and my education, and my parents...[M]aybe it seems as if they aren't terribly well shaped...[but] I'd say they probably are, because I think they've been manifesting themselves in me for a while...and I do think that's something that will get more developed as I get older...[T]hat's how we are created as people, as human beings, as we learn...we are able to apply it [values] differently.

It also appears that she was becoming aware that her values and perspectives expanded as she matured and has accepted that process as part of the human condition, that human beings change and develop over time, which causes our perspectives to become more complex.

Cassie enumerated her values very clearly.

The Golden Rule is something that I try and live by, as well as just some Montessori education. You always leave the space cleaner than you found it...and I think respect certainly plays a huge, huge role. I think my morals would make sure that I stick up for myself, but I wouldn't do things to other people that I wouldn't want them to do to me. I think that my religion also plays into that. I am Catholic and so, trying to do things for others... And, also, putting things in perspective, I think that's another big one,. And being grateful...and being present...I think those are what shape my values and actions.

However, when it came to judging others, she felt she needed to be more circumspect about what kinds of criteria she could use.

I think my basic values, regarding the sanctity of human life [would be valid], but I wouldn't say my religious beliefs should be thrust upon others...[M]y morals aren't

necessarily related to religion—I am more of a secularist—but American [values], you know: independence, freedom; all that is, I think, okay.

Ben exemplifies the participants' feelings about not judging others.

I'm not going to judge someone because I have different values than someone else. Because, to do that would be, in itself, against my morals...[T]o judge someone else on what they believe and what they've grown up on, not knowing the circumstances, or not knowing the kind of atmosphere they grew up in, or environment, or not knowing even their parents' thoughts or how they were raised...it would be unfair of me to try and judge things that they may have had no control over.

He seemed to be aware that others' views and morals were affected by their environments and experiences, and perhaps they could not be held to standards created from different influences.

When he did make a choice or a judgment, he followed his “gut feelings”, but reflected on his judgments and reconsidered them. He used a method he called “guess and check”. This is how he explained it.

A little guess and check. You do one thing and...if I don't get that gut feeling that that was a true decision, you might think, “well, maybe that wasn't the right thing to do”. And you go back, you revert back to what you thought before, and you take a different path. And then, when you take a different path, you see if you end up somewhere else. If you do, then you obviously know [what the right decision or judgment was]. That's your guess and checking...So, now I put different things into perspective, and then that's how I base my morals off those standards, and see how I feel after I make certain decisions.

Although he didn't state it explicitly, one of his moral imperatives appeared to be to fulfill his potential and to learn from his experiences. Elsa's process for evaluation was similar to Ben's, but appeared to be more simplistic. “Easy: trial and error, that's my main thing...[M]y truths are the ones where...it worked out best...[W]hen things worked out badly, there is not a truth”.

Kathy felt strongly that everyone has the responsibility to be informed so that they could make their own moral choices and decisions based on accurate information. She had a decidedly political take on the question of values.

It's the public's responsibility to be informed and to become...experts themselves. There's no reason that there can only be one expert or one authority on an issue, and I think that something a lot of people take too lightly is their role in what their responsibilities [are]... I mean social responsibility, understanding issues and voicing your opinion.

She emphasized this because she believed that “a lot of conflict arises because of ignorance”.

For Elsa, empathy, that is, understanding other's feelings, was of paramount importance.

This is how she explained her position.

I don't think that we're going to really be able to understand where the other person is coming from—but trying [to do so], it really makes a lot of difference. You don't have to agree with them to try to agree and to try to see where they're coming from...I like that term, “seeking mutual comprehension”...I feel like half the trouble in this world is that we have our own set of views, and it feels to me, that in all basic things, humans have the same emotions. It's a different cause for each person, but the emotions are the same. You may not be able to understand where they're coming from, but you should understand how they feel...You don't need to know where they're coming from to understand them a little bit, and I just want to be able to try to understand people. I think the world would be a better place if everyone just tried to understand.

This perspective suggests that Elsa had begun to challenge some ideas about “otherness” and had begun to explore the larger unity of human beings. Inez also spoke about the need to find common ground. “I think it's important to look at what there is in common, and try to get support for the things that you do have in common...unity is a pretty powerful tool”.

The participants were aware they had values which influenced their decision making process. They felt that they had developed those values based on the influence of their parents, environment, life experiences, and their past education. They were in the process of making them their own, by reflecting on the effects their past decisions had on themselves and others. Their processes varied in degree of sophistication, but they were aware that their actions affected others as well as themselves, and they wished to have what they considered to be a positive effect.

Transformations. Many participants talked about experiencing changes in the way that they thought about themselves, their relationships, and learning. They discussed how they came to their understanding of this process and the transformations they anticipated taking place in the future, particularly in terms how they constructed relationships, how they constructed themselves, and finding their life path.

Responsibility in relationships: “It’s not all about me.” This category contains information about how the participants viewed their relationships with others and offers insight into their emotional maturity. From their discussions, it became apparent that they were aware that their actions affected others and that they hoped they would make things better. They also appeared to understand that relationships are interdependent, and that a balance between satisfying their own needs and satisfying the needs of others is necessary to maintain healthy relationships.

Mary acknowledged her awareness of the affects people have on one another: “In a group situation, it’s not all about me, and I’m not the only one who has to be happy. If I’m happy, but everyone else is miserable, then my happiness probably isn’t going to last for very long”. Ben suggested that it was necessary to have a more “worldly view” about situations that arose within his relationships. When asked to explain this term he explained that it was necessary to

...be less ego-centric, to step back and see why is someone doing this. How does it affect not just me, but also those around me? And then, what can you benefit from that? And then, what are some of the downfalls of that?...I’m kind of looking at certain situations and putting together the pieces before having to make certain decisions or to do that to other people for certain things.

Cassie shared her premises that understanding how to relate to others was a part of a good education, and that individuals had the power to affect others in both positive and negative ways.

She believed that knowing how to participate in healthy relationships was an important component of learning.

I think education is about the whole person and not about just academics. I think it's about forming good, well-rounded individuals. I think a lot of it also has to deal with how can we form you so that you can go into the world and make it a better place...[E]very individual has the power to bring out the best or worst in the other person.

Elsa shared that having concern for others was an essential aspect of the person she wanted to become, however she expressed her awareness of the need to balance taking care of her needs with taking care of others' needs.

I want to be a good person and I want to be as selfless as I can...[but] there's a line that I have to draw in the sand at some point where it's like, "Hey I come first after this line". But, for the most part, I want other people to matter to me; that's part of the thing I consider being a good person. So...other people play into my decision-making a lot more than I ever would have guessed.

The desire to be thoughtful about others and the environment in general was important to most of the participants, but many mentioned the importance of taking care of themselves as well. Although they wanted to help and please others, that desire did not define them, and they did not want to do so if it would be detrimental to them. Mary sums up her feelings this way:

I'm kind of a people pleaser, I guess...I got it partially from my parents—they always taught me to be considerate of others—and also, just going back to Montessori. You had to really be considerate of your peers, and not be disruptive and know how to work with people, which I think I learned really well, just being in Montessori so long. I've learned how to keep other people happy, but not jeopardize my own happiness.

The participants expressed a real desire to be considerate and empathetic in their relationships, and understood their responsibility towards others, but they also manifested a sense of responsibility towards themselves as well as they moved into the future and continued in their process of becoming.

Self in process. Use the term “self in process” to convey the idea that life is a continuous process of growth and development. Individuals may or may not be aware of undergoing and participating in this process. The answers the participants gave during their interviews implied an awareness that their perspectives had changed in the past and that they were currently engaged in a developmental process that involved the construction and reconstruction of perspectives, opinions, and beliefs. Many realized that their views had changed over the course of their lives, and they projected that their perspectives would probably continue to change or develop over time.

Ben was initially ambivalent about his views changing in the future, but as he explored the idea, he warmed to it. This was his response to the question, “How likely do you think it is that your views might change in the future?”

I don't think it's that likely, just because of what I've gone through...bits and pieces I've taken to make myself stronger. But, at the same time...just to think about how much I've changed since the end of high school and now, it's unbelievable. So, just to be ignorant and say “I'm not going to change at all” would be ridiculous. I think that there's always going to be an openness to where parts can change...I'm open to it and I want to see where it takes me...Whatever life throws at you, you're always changing.

Cassie was fairly certain that the beliefs that were important to her would remain constant, but expected that “Little things here and there will certainly change...I'm growing, and I'll be married one day, and I'll have kids...grandkids, and I think that it [my view or perspective] will be changed. I would be scared if it didn't change”, so she anticipated and welcomed developmental change in her perspective as she grew and acquired more knowledge and experience. Debbie stated this quite clearly.

I did think it [my point of view] is something that is reasonably well developed, and I do think it's something that will probably get more developed as I get older...[A]s I get older, or learn something new, or totally different, or gain some new knowledge, that's going to change that. And, so, even though right now I think my ideas are pretty well

shaped by my knowledge and my experience in my life, I'm only as good as 20 years of my life and that's not very long...Thirty years from now, I could be totally different.

As she considered this, she added that she saw the value of this continued change. "I think people have to get out of their comfort zone...people aren't going to learn anything if they stay in their bubble". Gina foresaw change for herself as well, but expected it to be developmental and incremental. "I think I will just grow and develop and become more intricately nuanced, but still be on the same basic path. Unless I find something in myself I really don't like, I'm not going to change very much."

Elsa saw her world view as a perspective which she had constructed from her exposure to other perspectives. Although she felt that she had defined it for herself, she predicted that it would continue to evolve.

The worldview that I have has come from all these things, but also, I know it's not set in stone, yet. I have certain truths that are set in stone, but, for the most part, I feel I still try to be really open to other things, just in case...I want them [my views] to keep growing. They're not done at all by any means. They will continue to grow. I'm really excited by that.

Inez saw this process of change in perspective as being a natural part of the human condition. She perceived people as perpetually changing entities – entities that change in many ways throughout their lives.

I don't think people can really be static. I think it's just a necessary element in being human that you're dynamic. I think you would definitely change - depending on what happens with political issues, what happens with conflict and religious views, what happens in my life and my experiences, with what my needs end up being and what I want. I think I could definitely change. What's important to me would definitely also change. I think that a big element of what informs my worldview is what's important to me, and that changes as you get older, too.

These comments reveal that these participants held specific views at the time they were interviewed, but realized that they and their views could and probably would change. Thus, they were able to distance themselves from their perspectives sufficiently to reflect on them.

Elsa revealed some insight about how she perceived the construction of opinion might occur.

I can't remember who said this, but the quote is, "the mark of an educated mind is to be able to entertain an idea without accepting it" and so I try to accept that I could be wrong and that they could be wrong, and that maybe, a little bit of our ideas could meld together and there might be truth in both of them.

Kathy elaborated on this theme, discussing how perspectives are relative, complex, contextual and personal.

If there's anything that I've learned through my studies and through just life in general, it's that, even if you see an answer as wrong... it looks like its right to someone. There's a reason that someone made this decision. If you look at our world and our history, it can be so confusing. How can these things happen? How can anyone see this as right? But, you have to understand that it's not black and white. There isn't just one right or wrong answer. If it seems very clear-cut, then you're just not having the full understanding of the issue.

The complexity of the world and the multiplicity of perspectives appeared to create the need for the students to expand their knowledge, opinions and perspectives. This is echoed in Inez's statement.

Just growing up and becoming my own person, and then that whole process of moving from my childhood to young adult, just made me realize, the world's not made in black and white. That is not actually the right way to think. It's not going to be that simple...I don't necessarily think of right and wrong as being exclusive of each other.

Many of the participants appeared to have some awareness that they, as individuals, were undergoing a process of expansion or evolution in their thought processes. They indicated that they perceived that humans, knowledge, and points of view changed over time depending on context, experiences, and other factors.

Finding a life path: "Doing something that you love." Although this topic was not directly addressed in the questions posed to the participants, many seemed to be in the process of searching for and discovering their direction or vocation as young adults and brought this up in

their discussions. A few were fairly certain about the direction they wanted to go, more were still searching. Financial aspects of their potential choices concerned some, but most were clear that they wanted to find something they loved doing or something they felt was worthwhile and would contribute in some way to making the world a better place. Many made statements that were very similar to Elsa's comment, "Every semester that passes, I realize more and more, how silly it is if you do something you don't love".

Ben was becoming aware that he was moving into a new way of looking at his possible vocation or purpose.

I think right now, I'm in an in-between phase...I'm more open to allowing myself to find my own path and that's where I think I'll be transitioning even next year, or maybe take a couple more years...The point of grad school is to push yourself to do what you need to do and what you have a love for, for education purposes, and prove yourself, or to prove to yourself, that this is what you want to do and go for it.

Nathan's perspective was very similar. He too realized that he would need to begin to find a path or purpose, and so was beginning to search for where his interests lay, for a profession or vocation he cared enough about to dedicate himself to for a long period of time.

I'm realizing that I am going to have to start thinking about what I want to do after college and for the rest of my life. So, I'm paying a little more attention and trying to see the different aspects of all these things that I can study, because I need to know what will interest me, what I can see myself doing for the rest of my life.

Ginnie's perception of this quest was a little more certain than Ben's or Nathans, in regard to its general direction, but she was unclear of what the particulars would be. She echoed the statements of several participants in stating that she "would like to accomplish things that I am proud of."

I have certain standards and certain goals for myself and when I feel that I am doing something that's working towards them or doing something that is detrimental to those goals, that's where those feelings come from...I want to have some sort of purpose, and for me, that sense of purpose comes from having a job that I feel is worthy of my own praise, not necessarily of other people's praise, but I would like to have a future job that I

am proud of.

Debbie was torn between studying in areas where her interests lay and the need to make a living. Because these interviews were done during the period of the recession, I was surprised that more participants did not have the same financial concerns.

I spent... the first year of college taking a bunch of introductory to major courses...I really liked all of them, but I started feeling that a lot of people that graduate with those degrees typically end up at Walmart and McDonald's, and I didn't really want to do that...so right now, I'm declared as a mass communications major...because you can pretty much work for anyone and do anything media related or journalism... [W]ith the [current] economy, education is just so important... I'm completely positive about getting at least my bachelor's, because I think that is a really good idea and it's really going to help me find a job, and find a good job. It's going to be actually something that I want to do, and enjoy doing, and I'm going to be going in a good direction in my life.

Despite her practical bent, working at something she enjoyed doing was still a priority for her.

Elsa came to the realization that if she chose something she loved, she would love working hard at it.

At some point, it just started to all make sense. People don't do things because they dislike them. People don't work really hard at things...because they dislike them. They choose the things that they love, and those are the things they know a lot about, and it's not work anymore. So, figure out about the ones that you really love and the things that you enjoy.

Pete was just beginning to notice the large themes that seem to hold interest for him.

Some of what intrigued him related specifically to his own process of maturation and the human condition.

What's the psychology of an individual? What motivates a person to go through their actions? There's biological motivations, both like the effect of chemicals and hormones on the brain; and the evolutionary perspective; and there's the humanistic perspective, where man has a soul, and it's a realization of self-enlightenment; and an economic perspective, where everything boils down to the pursuit of money, and man is a rational economic actor. So, there's a lot of different perspectives to motivation in a person.

Ginnie, however, had begun to narrow things down, as she felt she had recently become more “*aware* of life and its responsibilities”. She explained that she was more certain that she might

pursue a career in medicine, and how she had approached that decision.

I've explored the foreign relations route, which is the other major I'm considering, and I did my whole senior project in high school on that, so I feel that I have enough information as far as that goes,. But I really do want to find out more about what it means to be a pre-med undergrad or what it means to work in a hospital or to have the responsibilities of a doctor.

She was hoping to volunteer in a hospital over the summer to get some concrete experience before deciding.

Several participants were fairly sure about the direction they were going to go in the future. Fiona, an English major, was interested in writing plays for stage and screen; Helen was majoring in mechanical engineering and was a midshipman in the Navy ROTC; Inez had a double major, anthropology and German and was “very focused on my thoughts as a member of academia, and in writing my own research [and] contributing what I have to say to the field”.

Cassie also seemed clear about what her future plans were. She felt almost called to her future profession.

I do want to be a Montessori teacher and do my training...I think I've known this since 7th grade. ..I've never wavered in my support for Montessori education...it's what I want to go back to, what I want to do. I think it has shaped my whole life...It's not so much a job to me, it is literally a vocation. I honestly feel called to it...it's a weird feeling when you know exactly what you're meant to do.

Most of the participants were definitely aware that they would need to make a commitment to a direction and profession in the near future, and were in the process of following steps toward taking on that degree of obligation. Although they took the commitment seriously, they believed that it was important to find a path that included something that they loved to do and that would make a contribution to the world at large; they also sought to find something they loved to do so that they would love their work.

Montessori Influence. This theme was initially a category, but eventually seemed worthy of being a theme in and of itself. None of the questions directly asked the participants to describe their Montessori experience; yet, as has been evident the influence of their early Montessori environment colored much of what the participants said in every aspect of the interviews ,and specific examples from those experiences were often used to illustrate points that they made about their relationships, values, and world views. Given the prevalence and variety of these descriptions, it ultimately seemed important to gather many of them in a theme of their own, rather than have them only as additions to the other themes. In the interest of clarity and brevity, many of the student’s responses in this section have been truncated. The more complete transcriptions are included in Appendix G.

By far, the most prevalent attribution to their Montessori education made by the participants was their love of learning, which all the students mentioned. Helen explained how she felt Montessori nurtured and enhanced her natural curiosity; curiosity is one of the human tendencies identified by Montessori and supported by her method. Helen went on to describe the connections she saw between aspects of her approach to learning and her early experiences in Montessori. She saw it as an experience that even supported her personal development, above and beyond just her educationally related growth.

I’ve been curious about stuff... as long as I can remember, but I started Montessori about the same time as I can remember, so the Montessori is probably an influence. I definitely feel starting out in that Montessori environment allowed me to develop that learning style a lot more than a lot of other people I know. I know people who are the same kind of learners, but they don’t seem to embrace it as much. [In] Montessori...they just set you loose and said, “Go! Study! Learn things! Become more aware of the world.” [Montessori]...really fostered my ability to learn on my own and made me be interested in doing it on my own, so I was self-motivated, which is why I love doing things...I look back at Montessori and say, “Look! Learning can be fun!”...I really enjoyed it and I definitely feel like it helped develop me more, as a person. You're given a chance to learn for yourself. So, you get a chance to think about things more...Conventional schooling

doesn't add any teaching on who you are, whereas Montessori, well, [it] doesn't explicitly say "we develop who you are," [but] they kind of do.

She also felt that her experiences in Montessori environments helped her remain self-motivated and fostered her ability to know herself and be engaged in her process of self-development-- another focus of the Montessori philosophy of education.

Inez reflected on how Montessori influenced her overall thinking and her awareness of the interconnectedness of different disciplines.

One of the biggest things that I really liked about it, especially when I got a bit older and saw like all the connections, was how much you were introduced to ideas when you are little and then understand those ideas more thoroughly when you are older. I think that's really symbolic of how knowledge or learning evolves throughout your life. You engage with an idea on one level when you're younger and then when you're older you engage with it more deeply. Montessori, I think, inherently teaches you to build on something you've already learned. I think Montessori does that with so many different things. You learn something really basic...and later you learn all these different complexities to it in trying to help you figure out how to respond to different situations. So I would definitely say it's accumulative.

This aspect of the Montessori Method that Inez described is part of what Montessori called indirect preparation. That is a process in which aspects of one material indirectly prepare the learner for future tasks or for concepts that will be encountered later. Inez also believed that Montessori helped her to challenge herself to do her best. "My Montessori classroom set a really high standard and certainly taught me how to hold myself to a high standard".

Kathy also had clear memories of specific situations that occurred in her Montessori classroom that she believed influenced how she currently felt about and approached learning. She explains in detail the incremental process she was guided through in her Montessori program as she began to explore what it means to do research to find out more about something she was interested in. It is a process which allowed her to discover on her own that there are many sources of information, and that those sources may have conflicting information; it allowed her

to discover how a seemingly simple question could be more complex than it appeared; it also afforded her the opportunity to discover how her own skills and perceptions became more sophisticated over time. [See Appendix G for a more detailed excerpt]. She also appreciated the way in which her teachers participated in the process.

Kathy described another project she did in her Montessori middle school. Just remembering that early process and the level of rigor that had then been expected of her, encouraged her now, in college, to hold herself to higher standards and strive to accomplish more. She also noted that this particular approach assisted her in seeing the complexity and interrelated nature of the world she was now finding out about. She even mentioned certain techniques that she found out about during middle school that continue to be useful. She attributed her perspective that “learning is a lifelong process and goal” to her early experiences, as well as her understanding of herself as a valuable participant in the learning process.

Just one more thing, as far as learning goes, specifically with Montessori, is that our teachers really showed you what you could do as an individual. A big part of it, having mixed grades, was you were learning with other students. You could teach other students something, and you really realized that you had a self worth and value and learning community at a very young age, and having that understanding, I think, really helped promote my growth. An aspect of learning was that I was a valued contributor in the 1st grade.

Nathan felt that Montessori had helped him to think critically and he saw that as an asset when trying to understand and learn from diversity. He also saw it as a good preparation for the freedom he was experiencing in college.

One of the things I know was stressed [during Montessori] and was important was critical thinking and problem-solving...I think that that kind of thinking really [now] helps me understand that different people have different opinions, and different people do things very differently from other people. You have different natural mindsets, and I think that . . . a big part of that was Montessori helping me understand things better...I'd say Montessori prepared me more for, not the academics part, but the how to go about doing work [part]. Montessori, in elementary, probably prepared me more for college than

junior high and high school did, cause in junior high and high school I was at public school—and again, it was just sitting in rows and listening to lectures. But Montessori was huge on freedom... It's not a rigid structure; it's a free thing, which I really, really like. I'm a fan of my Montessori background.

Fiona also saw Montessori as a good preparation for college.

It was a really natural transition [from Montessori high school to college] because of how much choice we had in the Montessori high school curriculum. Picking classes felt natural, seeking out adult relationships with your professors and mentors was something that came naturally, and definitely made the transition smooth and fun. Those were things that really helped me.

Ben had speculated about whether his transition to college would have been different, had he had the opportunity to attend a Montessori high school.

I would like to see how it would have been if I had gone to a Montessori high school. At the time I was in high school, there wasn't one near me. I think it would have been interesting to see my upbringing and also where I would be today because of that...because of how I love Montessori. I appreciated Montessori because of everything they did and everything we were allowed to do...I feel that spurred my love for learning and understanding that it's up to you to want to learn...I would love to send my kids to Montessori if I had a chance to.

Debby attributed her desire to grow and achieve to her prior Montessori experience

[In Montessori] you do a lot of things by yourself. You work at your own pace, and what's really nice about that, is you really grow; you make absolutely sure that when you're done at the end of the year you have grown as a student, and as a person goes, you have more knowledge.

She also saw similarities between the approach to learning in her Montessori class and what she was currently experiencing in college.

[In college] you really take classes that you need and that are gonna further you, further your learning, and your education [which is like Montessori]... I think it says a lot about Montessori, and I've never actually thought about that before and I think that's interesting.

The students seemed to feel that their Montessori education helped them value what learning and knowledge could do for them, and helped them become more aware of the process

of learning and how it influenced who they were becoming as young adults. Mary summed it up as follows:

I just think pretty much everything that I've learned about myself this year in college I've come to realize were things that were already true about me, and that I really feel occurred because of my Montessori education, and that I just didn't really know about it.

Summary

In this chapter, I reviewed the process of data collection, reduction, and analysis, including a summary of the coding process and a discussion of the categories and themes that emerged. The themes included: How the participants experienced themselves as learners; the participants' reflections on how they know, think, and understand; the participants' experiences of past and present changes and expectations of future transformations; and how the participants related to their previous Montessori experiences. The findings of this study offer some insight into the perceptions of these post-Montessori participants as they begin their college years. We see some commonalities in their thinking about knowledge and learning, and in how they perceive themselves as learners. In general, they are enjoying college, love learning, are self motivated and self directed, and want their learning experience to be meaningful and in-depth. They are intrigued by multiple perspectives, and welcome the opportunity to stretch and expand their world view. They are able to reflect on their values, opinions, and beliefs and are continuing to expand their ideas about the nature of knowledge and truth. These commonalities suggest an unexpected level of epistemological sophistication as compared to that found in most research with early undergraduates. The following chapter includes a discussion of the findings in relationship to relevant literature, the field of education at large, suggestions for further research, and a discussion of personal learning that resulted from the research process.

Chapter V: Discussion and Conclusions

This exploratory research study examined how post-Montessori, undergraduate college students perceived their college experiences. The purpose was to discern whether their early Montessori education might have ongoing effects on these students as learners and as developing individuals. The specific research question was:

How do undergraduate college students, most of whom were completing their freshman year, who were educated according to the Montessori Method during their early years, describe their experiences at college? More specifically, I explored these areas:

1. How do these students view themselves as learners?
2. What type of learning environment do they prefer?
3. What criteria do they use to make difficult decisions?
4. What meaning do they make of the possible influence of their prior Montessori experience?

I used the “snowball technique” to identify possible participants, and interviewed all those whom I was able to contact and schedule on Skype, a total of 13 participants. The interviews lasted between 1 and 2 hours each. After the interviews were transcribed, I used thematic analysis (Saldana, 2011) and multiple data sorts to construct 12 categories within four overarching themes. In this chapter, I summarize the findings described in Chapter 4 and discuss how they relate to the research question. Next, I discuss how the findings relate to the constructivist theoretical context, with regard to Perry’s (1999) positions, Montessori’s (Grazzini, 1996) goals for learners in the fourth plane of development, Kegan’s (1994) Orders of Consciousness, and Marton and Booth’s (1997) descriptions of reproductive/reconstructive learning. I then relate the findings to the field of education at large and education leadership in

particular; examine possible policy implications and social justice impacts; and discuss the use of the conceptual framework. Finally, I look at the implications for further research and new questions that the findings stimulate, as well as my own journey of learning through the dissertation process.

Findings in Relationship to the Research Questions

The research question addressed by this study was:

How do undergraduate college students, most of whom were completing their freshman year, who were educated according to the Montessori Method during their early years, describe their experiences at college? More specifically, I explored these areas:

1. How do these students view themselves as learners?
2. What type of learning environment do they prefer?
3. What criteria do they use to make difficult decisions?
4. What meaning do they make of the possible influence of their prior Montessori experience?

I address each of these questions separately as follows.

How do post-Montessori students describe their college experience? In general, the students enjoyed their college experience, finding the increased freedom, the opportunity to choose classes, and to follow their own interests much to their liking. They were excited that their professors were interested in the subjects they taught and passionate about sharing their knowledge. The students felt they were well prepared for the college experience and had few problems adapting to the college environment. Many stated that they were appreciative of the increased rigor and the more educationally engaged peer group they discovered, as compared to their previous high school experience. Those who came from Montessori high schools expressed

some disappointment in the increased focus on grades and decrease in learning for the sake of learning. All of them saw college as an opportunity to learn and grow and discover what areas of interest they would develop into a career.

Perry discovered that the learning difficulties experienced by new college students were not rooted in their lack of motivation, their study skills, or their ability; they sprang from their view of knowledge itself...Perry's work helps us to realize that the educational process may actually create misconceptions of what learning is about. (Ramsden, 1988, p. 18, as quoted in Moore, 2002, p. 27)

The findings of this study suggest that the participants did not experience significant learning problems as they embarked on their college careers, and that their understanding of the nature of knowledge seemed to be evolving towards a more complex, nuanced, and contextual view. Their early exposure to receiving information from various sources that might be conflicting, plus the Montessori culture that promoted the perspective that there can be many different answers (rather than finding the "right answer" in a textbook), may have affected these students as they were forming their ideas concerning the nature of learning and knowledge. Perhaps Montessori provided a bridging environment "offering contextual support [which] provided a mechanism for students to reach beyond their typical modes and respond at higher developmental levels" (King & Kitchener, 2002, p. 56).

How do post-Montessori students view themselves as learners? The students viewed themselves as self motivated, self directed learners, who enjoyed learning for the sake of learning and saw the pursuit of knowledge as a lifelong process. Many felt they were "hands on" learners, who wanted to be actively engaged in and responsible for their own learning. They enjoyed pursuing specific areas in depth, and wanted to see the larger picture and discover how disparate seeming disciplines might be interconnected and related. They saw themselves as

problem solvers who wanted to be as independent as possible in their learning process, seeing professors as guides and resources rather than as authority figures and sources of knowledge who dictated what to do and how to do it. Some mentioned their desire to eventually add to knowledge through their own research. This suggests that these students engaged in deep approaches to learning (Marton & Booth, 1997), and were hinting at characteristics common to people approaching Kegan's fourth order, and would thus be better prepared to address the challenging issues of adulthood.

What type of learning environment do post-Montessori students prefer? They generally preferred a learning environment that offered the opportunity for freedom of choice in what and how to study. They tended to find classes that involved "hands on" opportunities and project based learning most appealing and it was in those kinds of setting that they reported they learned the most. They sought out and enjoyed opportunities for what they called "in-depth learning," wherein they could delve into a topic or area and explore it thoroughly. They saw that there were different types of learning going on in their college environment that involved other aspects of life, such as learning about relationships; about different perspectives, cultures, and values; about themselves; and learning how to navigate as independent, interdependent young adults, outside of the structure of the nuclear family—and considered this type of learning very desirable, as well. They also reported that their preferred learning environments tended to remind them of aspects of their prior Montessori learning environments. Taken as a whole, these preferences suggest the post-Montessori students sought to engage in ways that Martin and Booth (1997) characterize as deep approaches to learning.

What criteria do post-Montessori students use to make difficult decisions? When confronted with a difficult decision, many participants sought out input from multiple sources,

including parents, experts, friends, and their own “gut feelings.” They then ran the possible actions through the lens of their own morals and standards. They were concerned whether their decisions could impact others beside themselves, and therefore attempted to anticipate what those impacts could be. They felt it was important to follow guidelines like the Golden Rule when deciding how to act towards others. When looking at the possible impact of a decision, some felt the most important criterion for making a choice was the impact the action might have on the physical and emotional welfare of others as well as themselves, as opposed to its financial repercussions, although they were aware that financial impacts could be important criteria to others. They had a strong desire to be fair to all concerned and felt a responsibility to be well informed before making decisions and to consider as many sides and viewpoints as possible. These characteristics suggest a level of maturity similar to individuals moving towards Kegan’s fourth order and operating from at least position 5 in Perry’s scheme.

What meaning do post-Montessori students make of the possible influence of their prior Montessori experience?

What makes Montessori education so special is that its objective is to help human beings with the enormous task of inner construction necessary to pass from childhood to full adulthood. Education is an essential aspect of human development. We cannot become fully adult without it. The level of formation the individual personality can reach depends on it. (Montessori, 1976, p. 102)

All the post-Montessori students reported that they remembered their previous Montessori experience fondly, and felt it had a positive impact on them as learners and as individuals. Some mentioned that it nurtured and enhanced their creativity, others that it fostered their ability and desire to learn on their own. One said that it helped teach her who she was, another said “it helped me develop as a person,” and another stated that it influenced how she thought about things, how she saw connections, and how she saw acquiring knowledge as a process of building

and expanding upon past information and experiences. She elaborated further on one specific aspect of Montessori:

[O]ur teachers really showed you what you could do as an individual. A big part of it, having mixed grades, was you were learning with other students. You could teach other students something, and you really realized that you had a self worth and value and learning community at a very young age. And having that understanding, I think, really helped promote my growth. An aspect of [that] learning was that I was a valued contributor in the 1st grade.

For her, the Montessori experience fostered her sense of self worth and value within her learning community.

The group collectively had positive memories of their relationships with their peers and their adult guides or teachers. They had vivid memories of their earlier learning and the high standards to which they had been guided to hold themselves, and they wished now to continue in a similar manner the path they had begun earlier.

It appears that the students truly valued the educational and personal experiences they had during their years in Montessori environments and that these experiences left them with a positive relationship with learning, with themselves as learners and individuals, and with others. They felt they had made a positive and valuable contribution to their learning communities and would continue to do so.

Theoretical Context

This study is based on constructive-developmental theory, in general, and emphasizes the work of William Perry (1970/1999) and several others whose research followed in the wake of his ground-breaking model (Baxter Magolda, 2002, Belenky, Clinchy, Goldberger, & Tarule, 1986, Kegan, 1994, King & Kitchener, 2002). In addition, I include Maria Montessori who, though she preceded Perry by a half-century and is not traditionally classified in this way,

created a model of learning and development that is in many respects built on similar assumptions: that we are not so much human beings as human becomings--entities that are always in process; further, that it is through the process of interacting with environment, others, and self that we learn to making increasingly complex meaning from these interactions; finally, that we are ultimately responsible for the implications of the meaning we make.

Human consciousness naturally evolves as we refine our perceptions of ourselves and others to more and more complex levels. The literature suggests that many developmental models describe a sequence that shows “movement from a dualistic, objective view of knowledge to a more subjective, relativistic stance and ultimately to a contextual, constructivist perspective of knowing” (Hofer, 2002, p. 7).

In a groundbreaking longitudinal study that spanned more than a decade, Perry and his group examined how students developed during the college years and speculated that there might be ways to support students in moving through this continuum of ever-increasing complexity of ideas and decision-making. They felt that fostering a more complex perspective about knowledge and values might assist individuals in making other essential life decisions.

We also believed that students who became more complex in their thinking in the classroom could apply that thinking to the complexities of citizenship in American life... We identified four variables that seemed to underlie the developmental model: 1) the student’s experience of and response to diversity; 2) the amount of authority-provided structure for the learning environment; 3) the nature of experiential learning that was experienced as part of the class; and 4) the degree to which the class could be characterized as respectful, collaborative, and able to relate the subject matter to the context of the students’ lives (personalism). (Perry, 1999, p. xxiv)

In examining how the students in this study appear to stack up with regard to Perry’s four variables, it appears they are:

1. Accepting, in fact, welcoming of opportunities for interaction with others who have diverse opinions and perspectives
2. Anxious for less structure and more personal responsibility in regard to their learning; i.e., self motivated and self directed
3. Enthusiastic about experiential opportunities for learning and capable of more complex thought
4. Comfortable in and preferring environments that were respectful and collaborative, and looking to apply what they learned to their own personal lives

The literature suggests that typical college freshmen are in the midst of *multiplicity*. They are in the process of coping with the discovery that there are diverse possibilities for finding information, and that the information they find can be conflicting. There is much uncertainty as to what can and can't be known; for many, a perception that all perspectives are equally valid prevails. They still look to their professors to provide them with answers, and are not self-directed, self motivated learners.

As learners' epistemological perspectives mature, they perceive that knowledge is "increasingly conjectural and uncertain, open to (and requiring) interpretation" (Moore, 2002, p. 22). Moore also points out that learners' perception of teachers/professors changes as well, and they are perceived more as colleagues with a specific area of expertise that can be utilized, rather than as ultimate authority figures; and the students increasingly perceive themselves as "active agent(s) in defining arguments and creating new knowledge" (p. 22). Reflective reasoning, a "willingness to reevaluate the adequacy of their judgments as new data or new methodologies become available" (King & Kitchener, 2002, p. 40), is another characteristic that occurs later in the Perry scheme.

The post-Montessori participants in this study appear to have comfortably accepted the possibility of multiple perspectives; they seem also to realize that although “truth” may be relative, “knowing” requires taking a personal point of view, which they were beginning to do. They also tended to regard their professors in a more collegial light, looking to them for guidance and expertise rather than direction and authority. It also appeared that they were willing to reevaluate and reexamine their positions and perspectives when exposed to new sources of information or ways of thinking.

Given that these participants were former Montessori students, it is also necessary also to look at the capacities that Montessori posited would begin to be manifested during what she termed the fourth plane of development (ages 18 – 24), if individuals had been properly supported during the first three planes in developmentally appropriate environments.

Montessori’s goals for her students were that they be grounded in and adapted to their time, place, and group, and that they be performing a dual function: fulfilling their own potentials and completing what she called their “cosmic task” (Thrush, 1975); that is, offering their own unique gift to humanity as a whole. In describing the individual on the threshold of adulthood, or fourth plane of development, she identified an individual who, having successfully navigated the first three planes, would have arrive at a point where

the individual can develop the spiritual strength and independence for a personal mission in life. This individual can become a human being whose aspirations have transcended the temptation of personal advantages in the way of power and possessions, a human being who has attained a high level of moral consciousness and responsibility and can work for the good of humanity. (Grazzini, 1996, p. 219)

Montessori suggested that for optimal development during the period of the fourth plane, several tasks needed to be accomplished. Thrush (1975) identified these as:

1. Becoming economically independent

2. Developing empathy – becoming sensitive to human history and thought
3. Finding one’s path – beginning to make one’s contribution to humanity
4. Being responsible for one’s own decisions
5. Committing to life-long learning
6. Finding a sense of self-validation

Other capacities, as described in the constructive-developmental literature as a whole, that are considered indicative of increasingly mature perspectives on learning, knowing, and knowledge, include: the ability to reflect on one’s experiences and perspectives; an openness to multiple perspectives; a view of knowledge as relative and contextual; a changed relationship to authority; and metacognition--the ability to think about how and what one is thinking. The findings in this study strongly suggest that the participants were definitely engaged in a majority of these tasks, although becoming economically independent was something that most of the participants anticipated would occur in the future, once they had completed their bachelor’s degrees.

A detailed examination of the findings in regard to each of these capacities other than economic independence follows.

Empathy. As evidenced in Chapter 4, these students were concerned with the needs of others and believed that empathy was a necessary characteristic that they were developing. They had a strong sense of responsibility for how they interacted with their peers and others. According to Kegan (1994), individuals in the (typical) adolescent second order of consciousness understand rules and procedures, but are likely to follow them because they are either seeking rewards or afraid of negative repercussions on themselves. Because they are egocentric, their concern for others is primarily (albeit, unconsciously) based on whether that particular individual

will help or hinder them in pursuing what they want or need. They approach things from “tit-for-tat” perspective; they are not yet capable of “feeling with” another person’s feelings, i.e., empathy. Thus they can act in ways that seem harsh and cruel, yet not seem to realize the effects of their behaviors on others.

Once individuals move into the (typical) early adult third order, they unconsciously internalize the needs and feelings of others. They understand that their actions impact others and they are concerned with the effects of those impacts. They can think abstractly about problems that do not concern them directly, but have difficulty recognizing themselves as the source of their own feelings and reactions, instead locating those in their reactions to others’ interactions with them. They are also swayed by the opinions and perspectives of individuals and institutions with whom they identify or about whom they care, and are torn when there are conflicts between them, as they construct their own identities in terms of how others perceive them and in their adherence to the rules of their societies, religions, etc. “The third order, the culmination of adolescence, makes one both capable of, and vulnerable to, socialization” (Kegan, 1982, p. 287).

It is not until moving toward the fourth order that individuals begin to create a sense of self that is separate from the people and institutions that are important to them, and can therefore start to construct an independent sense of self worth and value. These individuals are capable of weighing and evaluating different moral systems and making choices between them based on how they perceive and value the realities of various contexts. They can empathize with others, and take their needs and feelings into consideration when they make decisions, but are no longer overwhelmed by their concerns about how others will feel or think about them—which was a limitation of the third order perspective.

The findings of this study indicate that the post-Montessori students appear to be operating from well beyond the second order in their ability to empathize with others and to understand their responsibilities in relationships. They are clear that “it’s not all about me,” and they take the needs and feelings of others into account when making decisions. Further, they have concerns about society at large and wish to have a positive effect on that, as well. It is interesting to note that there is some suggestion that they have flashes of awareness even beyond typical third order characteristics, in that several have begun to make choices based on their own nascent values rather than those of their parents, friends, or important institutions. They also seem to be able to set boundaries in ways that a person operating from the third order cannot, considering both their own needs as well as those of others and trying to find a balance between the two.

Several of the students explicitly attributed this ability to balance their needs and the needs of others to their earlier Montessori experience. They perceived that learning at an early age to work so that they didn’t bother others, to leave the community environment cleaner than they found it, and similar consistent practices assisted them in continuing to seek an appropriate equilibrium between their own needs and the needs of others.

Further, when they discussed their understanding of knowledge, several pointed out the necessity of being aware of and taking into consideration the perspectives of other individuals and cultures throughout history, and that having multiple perspectives was a necessary aspect of knowledge.

Life direction. According to Perry (1999), perhaps the most pivotal time for college students in their process of epistemological maturation occurs when relativism changes from being a special case within a dualistic framework (movement beyond belief in right/wrong,

we/they, black/white) to being the predominant framework where in dualism becomes a special case (pp. 122-123). It is at this point that relativistic thinking becomes the norm. Perry found that such students reported four significant characteristics, one of which he described as “unawareness of a path toward a new identity through personal commitment” (p. 128). Students in this position seemed to find it difficult to examine their beliefs and to trust the truths of their experiences. They also appeared to be undecided about their futures.

This did not appear to be the case for these post-Montessori students. They reported that they had examined their beliefs and were in the process of evaluating and reevaluating their perspectives based on their experiences. Many of the participants were concerned with finding their direction in life and making a contribution to the whole that they could be proud of. As they took classes, they were looking for areas that interested them that they loved to pursue, as they felt it was also important to do something that they loved. Some were in the process of searching for areas of interest to pursue into the future, several were closer to choosing a direction, and a few described themselves as being fairly certain about what careers they were going to pursue. It also appeared that they were open to the idea that their perspectives might change over time depending on additional input and experience.

Why there is this difference between the post-Montessori students and those with whom Perry did his study is open to speculation. Perhaps their early experience--making choices from a wide array of materials and activities while at the same time being in touch with their own directives about what they wanted and what they were interested in--made it easier for the post-Montessori students to weather the onslaught of multiple possibilities and find their own truths. Again, this requires further research.

Individual responsibility. Being responsible for their own learning and the decisions that they made seemed to be very important to the participants. They were able to learn from their mistakes and actually use them as impetus for self improvement. Some linked being responsible with being honest with themselves, and believed that it was only through this kind of responsibility that they could fulfill their potentials. They tended to want to be in charge of their own learning, to make choices and solve problems on their own.

By contrast, as Kegan points out, many adult students have trouble with directions such as, “think for yourself” (2004, p. 285). He speculates that when adult learners seem unable to understand that means, “take charge of the concepts of the course and independently bring them to an issue of your own choosing,” it indicates that their self-construction does not yet have the fourth-order “authority” to use an academic discipline to critique its own assumptions (p. 285). Rather, they are captive of—have internalized—the assumptions of the discipline-as-authority. He posits that this could be so even though “nothing in the higher education literature suggests any recognition that the capacity of mind that permits a measure of personal authority in one’s learning is the same capacity that would permit a learner the cognitive sophistication to master the knowledge-generating and knowledge-validating processes of an intellectual field or discipline” (p. 285). It may be that the post-Montessori students’ preference for what they called “in-depth learning,” learning that is project based and that they could apply to something else of their own choosing, indicates some flashes of insight about one’s own authority that presages fourth order. It could also represent the most sophisticated phase in Marton and Booth’s (1997) description of *reproductive* learning, “application.” More specific research is necessary to make that distinction.

It is also conceivable that a learning environment specifically focused on supporting individuals in gaining and maintaining an awareness of their own direction and interests through freedom of choice and learning from their own mistakes allowed these post-Montessori students to be more aware of their personal authority in their learning. Yet another possible contributor to their apparent development is their early experiences with evaluating their own academic and social development.

This study's findings further indicate that the post-Montessori students saw themselves as being self-directed and self motivated—independent and responsible for their own learning. Whatever their current level of development, their early learning experiences may have better prepared them for the level of self direction that fourth order consciousness will require. “When we look into what higher education is calling for specifically, the fourth order nature of the desired complexity is as evident as we have already seen the desired independence to be” (Kegan, 1994, p. 285).

Lifelong learning. One of the most prevalent characteristics shared by this group of post-Montessori students was a love of learning, an eagerness to pursue it, and an understanding that the pursuit of knowledge was a life-long process. They enjoyed pursuing areas in depth, often going beyond what was required or suggested by the professors. As one participant shared

My mom always told me when I was a child that learning isn't just in the classroom; learning is a lifelong process and goal. You're always learning, no matter what you're doing. And, I think that mentality, tied into what I've learned about what *is* learning from schooling, has really, really changed my perspective... Because a lot of my peers definitely were like, “Okay, I'm done with the class.” Like, that's it [for them]: “I'm done learning” And [to me] it's like, “No! There's so much more!” There's so much more to it than just spending an hour every day in class about a subject.

Many of the former Montessori students found that tests and competition for grades detracted from their capacity to focus in depth on a particular subject or area, and therefore preferred

learning when there was less interference from external forces. This tended to promote their continued enjoyment of learning on their own, without the need for the pressures of a traditional school setting. Many of them also felt that it was human nature to continue to learn, grow, and develop, so expected learning to be a continuous process.

Self validation. As the participants continued to pursue their academic careers, they mentioned that they were learning for themselves, rather than because of the pressures of parents or teachers, and that they were judging themselves by their own standards. They felt that they had examined the value systems they had absorbed from their parents, school, and culture, and had amended and adjusted them to correspond with their own experiences and perceptions, in order to reflect their own beliefs and standards. As Ben stated, “I take bits and pieces that I think apply to my life...and kind of made it my own, rather than just copying others...I have found my own definition of my values.”

One of the participants mentioned that because of the multi-aged grouping and the peer teaching in the Montessori environment, she already knew that she was a valuable member of her learning environment, even in the first grade. The atmosphere of respect for the value of the participation and offerings of each individual that is cultivated in that setting may assist in the development of a sense of self worth, as the students concretely experience the results of their contributions on a daily basis.

View of knowledge. As mentioned in Chapter 2, Perry (1999) proposed a model or scheme to describe what he described as nine sequential positions, or phases, through which students may evolve during their college years. These positions are indicative of movement along a developmental path towards epistemological maturity; it begins with a dualistic perspective and progresses through relativism, until finally an individual is able to make

commitments within relativism, although few people evolve to this point. Such commitments enable people to construct and commit to their own value system and also remain open to new, thoughtfully considered possibilities.

The participants' responses in this study permit some approximations of their positions in regard to this developmental continuum. In terms of the continuum between dualism and relativism, it appears that all of the participants have discarded a dualistic perspective, no longer looking at things as "black or white," and are instead somewhere along the relativity continuum. Debbie's comment reflects this departure from dualism: "There's so little black and white and there's just so much gray." Most perceive knowledge as frequently contextual and relativistic. Inez's statement exemplifies this perspective: "I definitely don't think there's a transcendental truth in any situation...I don't think there's a universal right or wrong, or a universal true or false thing. Everything's more complicated than that."

The least complex aspect of multiplicity is anything goes; the theme is "everyone has the right to his/her own opinion." Later in the relativism sequence, people begin to establish some criteria, and ultimately develop a fairly clear sense of self and purpose, despite this fundamental relativity of knowledge.

Another characteristic of position 5 is the "breakdown of the old structure and identity, balanced by a realization of growth and competence in a relativistic world" (Perry, 1999, p. 128). It is informative to compare some statements made by Perry's students with those made by these former Montessori students. One student Perry identified at position 5 said about his initial encounter with relativistic thinking, "You find yourself thinking in more complex terms: weighing more than one factor in trying to develop your own opinion" (Perry, 1999, p. 125).

A participant in the current study, speaking about her definition of knowledge, noted similarly, “Knowledge is...knowing factual background in something...in addition to perspectives...to the point where you feel confident enough that you can make your own ideas.” Both seemed to be at the point where they were beginning to feel confident in creating their own ideas and opinions. Because these post-Montessori students were primarily upper freshmen at the time of the interviews, this perspective appears to be unusually mature compared to students described in most previous studies of college students’ Perry stages (Baxter Magolda, 2002, Moore, 2002).

Reflectivity/multiple perspectives. Another of the four characteristics of Perry’s position 5 is the capacity for detachment. His students in this position reported being increasingly able to view themselves and reflect on their actions. The post-Montessori students reported similar capacities. They discussed the process of utilizing the experience of multiple perspectives as an opportunity to reflect on their own perspectives and decision making processes. Several mentioned how they welcomed these opportunities and enjoyed the process of self-reflection—of examining and reexamining their ideas and positions. Again, this appears to be a somewhat mature perspective for freshmen to have developed.

Changed relationship to authority. The fourth characteristic of Perry’s position 5 is a change in the way the students related to authority. They began to feel as though they were more on a par with their professors, as members of a community based on “relativistic epistemology” (Perry, 1999, p. 139). The post-Montessori students also appeared to feel comfortable with their professors, seeing them as resources, but not expecting or wanting them to be authoritarian in approach. One remarked that, “professors are...there...to help you along the way rather than to tell you what to do. They’re there to guide you.” This perspective was accompanied by the

realization that learning was the responsibility of the learner; that those doing the teaching were not necessarily there for the students in the same way that teachers had been in high school.

What I found in some freshman classes...they [the instructors] don't care that much, because they're just there to do research or something, and they have to do a seminar for their profession. So, you're actually there to learn and have to teach yourself...it [teaching yourself] is changing how you're actually taking in your knowledge and education, and how you process that.

This change in how the students regarded their professors seemed to help foster the former Montessori students' self motivation and trust in their own capacity for being responsible for their own learning. Perhaps the less hierarchical and more collaborative relationships between students and their guides or teachers that is espoused in Montessori environments made this transition easier and more rapid for these participants. Further research is needed to more deeply explore this possibility.

Metacognition. Metacognition, or the ability to think about how and what one is thinking, includes reflecting on one's thoughts and actions, making plans and creating strategies, and having an awareness of how one's thought and actions affect others and the environment. It involves a process of self examination that allows individuals to evaluate what they have done and create strategies for being more successful in the future. This process of meta-cognition is very apparent in the responses of the post-Montessori students. When they discussed how they made decisions and solved problems, it seemed clear that they had created processes for accomplishing these things and were very aware of having done so. They created and applied strategies to assist them in gaining knowledge of class content, but because they loved to learn, they also looked for environments most conducive of their particular kind of learning. They sought out classes that allowed them freedom to explore at their own pace, offered opportunities for "hands on" and project based learning, and promoted in-depth learning. Many of the

participants explained that because their Montessori environments had offered these kinds of opportunities within an atmosphere that encouraged them to think for themselves and to make their own choices, they were prepared and desired to do those things in college.

In their book, *Learning and Awareness*, Marton and Booth endeavored to better comprehend how people experience learning differently. They were particularly interested in examining the internal rather than the external view of the student: “We ask, we observe what they learn, and what makes them learn, and analyze what learning means to them” (Marton & Booth, 1997, p. 16). They specifically looked at qualitative differences between what they eventually called a *surface approach* and a *deep approach* to learning. Marton and Booth discovered that students with a deep systematic approach to learning would relate what they learned to their own experience; they also realized that how people learn is a function of how they were taught to learn or experienced learning in the past (p. 34). Thus, it is likely that the perspectives college level students had on learning were influenced by the methodology utilized in their former Montessori learning environments.

Marton and Booth (1997) identified six approaches to learning as described by learners. The first three—a surface approach—they called “reproductive” learning; the last three—a deep approach—they called “reconstructive” learning. Learners who try to categorize and memorize disconnected pieces of material to meet class requirements tend to have a surface approach. Learners who try to abstract meaning from, change their understanding of, and develop a personal commitment to the material in ways that affect their ongoing understandings of themselves and the world around them have a deep approach (Marton & Booth, 1997, p. 156). The post-Montessori students reported that they preferred learning in depth, and sought ways of creating a personal relationship with what they were learning, so that they could fully understand

and utilize it in new ways. Martin and Booth (1997) also point out that an awareness of the whole is vital to achieving a deeper approach. Thus learning techniques and environments in which the whole precedes the parts are more conducive of learning, “One cannot learn mere details without having an idea of what they are details of. Learning is mostly a matter of reconstituting the already constituted world...when the whole is missing, learning is very likely to fail” (pp. 139-140).

The entire Montessori curriculum for the elementary years, called Cosmic Education, is based on offering the learners the larger picture of the universe and then filling in the details, based on a series of timelines, impressionistic charts, great stories, and science experiments. The post-Montessori students had this exposure, and were therefore accustomed to looking at the whole and seeing where things fit within it. As some of the respondents mentioned in their interviews, they loved the interconnectedness that they perceived within the Montessori structure, and looked to recreate it when they got to college.

Marton and Booth (1997) suggest that the deep approach to learning seems to be more successful than the surface approach. To try to bring about better learning they suggested that it was important to focus on meaning rather than details, to allow for time to pause and reflect, to allow the students to discover what was relevant rather than manipulating the text to point out relevance, and to limit instructions to allow for each student to approach understanding in his or her own unique way, in order to encourage meta-cognition. These are all essential elements of a Montessori environment; given that these participants were accustomed to these approaches, it appears they sought them out or tried to recreate them in their college environments.

Recommendations to the Field

The classroom structure of traditional education has been modeled on the defining characteristics of the mechanical world view, including linearity, hierarchy, reductionism, objectivity, outcomes, and empiricism. The advent of a participatory worldview has brought a new set of priorities including non-linearity, interdependence, process, relationship, and ecology (Lide, 2012). A Montessori classroom structure embodies these emerging characteristics. The Montessori approach is based on a non-linear developmental model. It provides a form of education that is not limited to mechanistic cognitive development, but integrally involves all aspects of human development and is thus well-aligned with the qualities of the emerging world view (p. 1).

The findings in this study suggest that post-Montessori students function well in college and report that their prior Montessori experience was helpful to them in several ways. It made transitioning to college easier, as they were used to the idea of freedom of choice and self directed work. It encouraged their self motivation and set an example of high expectations. It allowed them the opportunity to work on projects and study areas of interest in depth and within their own time frame, which made this type of work familiar and comfortable when they encountered it in college. As is discussed below, it might be valuable to promote greater use of the Montessori model in public and charter schools, to make such possibilities available to a larger group of students.

The students appeared well past duality in their thinking about knowledge and knowing, and better prepared for the complex, relativistic perspective Kegan (1994, p. 285-287) suggests is essential for solving problems that adults in this society necessarily have to contend with. Currently, however, “The developmental level of college graduates probably will not be sufficient for the kinds of problems they will be asked to address in a myriad of adult roles”

(King & Kitchener, 2002, p. 56). This suggests that something about the Montessori Method may act as a bridging mechanism, allowing these students to more quickly and thoroughly perceive knowledge as more than facts that are either true or false and to focus more effectively on finding meaning and understanding processes. It appears that a method of education that focuses on students discovering that there can be many possible answers derived from a variety of sources, rather than one that requires the one right answer found in the text book, fosters a more mature perspective on knowledge and knowing.

If our goal as educators is larger than higher test scores, if we are looking toward how to best prepare our future citizens to solve the complex questions of the 21st century, the findings of this study can encourage us to further investigate the possible positive outcomes a Montessori education may offer and their possible epistemological implications.

We need to foster individual [epistemological] growth by providing frequent opportunities for the exercise of judgment, but we also need to work toward creating the kind of society in which thinking and judgment are widely regarded as worth the effort they entail. (Chandler, Hallett, & Sokol, 2002, p. 139)

The implications of this study should impact both Montessori and traditional systems of education. They offer encouragement to Montessorians to continue in their work and to maintain quality programs that include the essential characteristics of freedom of choice; three-hour, uninterrupted work periods; a full compendium of developmentally appropriate Montessori materials; and fully trained Montessori teachers, as these practices appear to have positive long term effects on students when they reach college, and appear to prepare the students for successfully embarking on the fourth plane of development. Those in the traditional systems of

education might find further investigation of the Montessori Method worthwhile, as Mario Montessori, Jr. (1976) clarifies in his book, *Education for Human Development*:

It is interesting to note that several of the characteristics so often exhibited in Montessori schools are considered basic to human welfare and development by social scientists. In a list of properties of biosocial and sociocultural systems, Eric Trist mentions self-regulation, integration, independence, interdependence, coordination, and cooperation as basic to welfare and maturation, learning extended adaptability, the accumulation of culture, and the expansion of the environment. Because these are all properties that are in the search for the best means to prepare tomorrow's citizens. (p. 95)

Expanding the reach of Montessori education is a complex undertaking involving many institutional changes and policy implications. At a minimum, before the number of Montessori programs could be substantially increased, facilities training adults to be Montessori guides would need to be expanded and perhaps better funded. (Montessori teachers tend to be paid less well than public school teachers, which prices the costs of Montessori training beyond the reach of many.)

If Montessori methods were to be adopted by public schools, it would be critical to carefully direct and monitor the outcome. Research has shown that programs that adopting some of Montessori's principles and practices are not as successful as those that adhere to them fully (Lillard, 2012). It would also be essential to equip classrooms with the required didactic materials, and to adopt practices like the three-hour uninterrupted work period, mixed-age groupings within classrooms, and freedom of choice—none of which is easily done within current school structures.

Nevertheless, finding ways of improving students' ability to think about knowledge and knowing, to think critically and solve problems, are of critical importance to society at large (King & Kitchener, 2002, p. 54). If we assume that "students' understanding of the nature, limits, and certainty of knowledge affects how they approach the process of learning, and that

their epistemological assumptions change over time in a developmentally related fashion” (p. 55), a method of education which seems to promote this process and may foster the maturation of epistemological perspectives is well worth further consideration and investigation. The findings of Lillard’s (2006) study comparing inner city children who had Montessori educations with those who did not indicate that these benefits are shared by individuals whose circumstances are far less advantageous than many who attend private Montessori schools. This suggests that adopting Montessori on a larger scale within the public sector could have significant social justice implications, leading to better educational outcomes for disadvantaged youth.

The individual personality must develop the independence and maturity needed to see the present situation clearly and to visualize the future. It will then be possible to consider the direction we are going and how to influence matters so that we, with our powers of adaptability, our intelligence, and our creativity, can find a way to handle our world. (Montessori, 1976, p. 99)

Newly emerging centers, focusing on providing support for children from birth to six and their families, and the new social justice movement within the Montessori community spearheading their inception and researching their effects are hoped to offer possible impacts on breaking the cycle of poverty and improving educational outcomes for disadvantaged families (Cossentino, 2014). As a publicly funded pre-school education moves closer to reality, better understanding of the possible long term outcomes of a Montessori foundation could be important in deciding what kind of curriculum, focus, and method might be adopted.

Suggestions for Future Research

This qualitative study was exploratory in nature and sought to discover commonalities among post-Montessori undergraduate college students. A set of characteristics did emerge from

the data, as was reported in the findings, and those characteristics require further scrutiny. This could be done in several ways.

- A comparative study of former Montessori students and demographically comparable former private school and public school students could be done to see how they compared in regard to those (and other relevant) characteristics.
- A larger study could be undertaken based on utilizing LEP (Moore, 1988) to evaluate epistemological maturity of demographically comparable former Montessori and non-Montessori educated students.
- A longitudinal study following former Montessori students throughout their college years and beyond could be undertaken.
- Further investigations could be done with former Montessori students utilizing different instruments that have been developed to investigate qualities like love of learning, self direction/motivation, responsibility in relationships, empathy, flexibility, compassion, etc. These are the kinds of attributes that it would be valuable to know more about and, perhaps, how to better foster such characteristics through our educational practices.
- The possibility that epistemological sophistication may occur earlier in students in a developmentally supportive environment should also be investigated through a study of Montessori middle and high school students as well. Now that more and more such environments are being created, studying students who have been in Montessori environments from Infant Community through Farm School could be very revealing.
- Action research on the part of Montessorians currently in the field to look at the development of the qualities identified in this study or the identification of other characteristics would add to current knowledge.

- I personally would like to reach out again to the Montessori community and try to attract a considerably larger number of participants to take the LEP, in order to compliment this entirely qualitative study with some quantitative findings.
- Additional investigations of Montessori Family Community Centers, which are just now being developed to offer support to underserved families, and being studied by Cossentino(2014) whose work is currently in progress, could be undertaken.

Conclusions

The findings of this exploratory qualitative study suggest that the post-Montessori upper freshman college students who were interviewed showed common characteristics that contributed to their enjoyment of college and their successful participation in higher learning. These qualities included: self direction and self motivation; love of learning and the desire for deep, meaningful learning; a perception that knowledge, whether viewed as truth or opinion, is not absolute but relative and contextual; a developing sense of empathy for others and a responsibility to them; a developing set of personal values that are used to evaluate situations and choose actions; an interest in exploring multiple perspectives; a perception of the self as being in the process of development; and a desire to eventually find work that is meaningful and contributes to the whole. Further, the findings show that these participants felt their former Montessori experience influenced who they were, how they learned, and how they thought about learning and knowledge.

Many of these characteristics suggest a level of epistemological sophistication that is relatively unique compared to other undergraduate students as described by Perry (1999), Baxter Magolda (2002), and others; however,

the large majority of these contributors have little to say about what might have transpired in the years before college admission, and have shown even less interest in detailing the sorts of cognitive limitations that are presumably responsible for preventing still younger persons from having already moved beyond the sorry absolutist and objectivist state thought to characterize standard issue college freshmen. (Chandler et al., 2002, p. 159)

It seems possible that what goes on in the Montessori prepared environment supports epistemological development in a way not present in traditional classrooms: “While even very young primary school children may already be well on their way toward acquiring a fledgling constructivist epistemology, their classroom experiences do little to encourage them to develop that understanding” (p. 160). In the Montessori classroom, from the youngest ages, students learn through personal interaction with the didactic materials in the environment, frequently feeling not that they were taught but that they learned it themselves. In the elementary environment, they are encouraged to learn through their own research and to discover that there are disparate viewpoints and many possible answers. This is in marked contrast to the atmosphere in traditional classrooms where, “we may so thoroughly discourage and punish their use [epistemic insights] that such thoughts simply go underground” (p. 161). Future research could make it possible to ascertain if this is indeed the case.

As discussed earlier, there are various perspectives on the linkage between learning and development. We find that, “the dominant motif these days is to focus on learning in terms of student ‘attributes’ or ‘habits of mind’ (e.g., grit, resilience, character) with little or no explicit linkage to ‘development’” (Moore, 2014, personal communication). Thus, much current attention surrounding how to help students become more effective learners is centered around

either how to encourage, teach, or foster specific traits in students, such as *self-control* and *grit* (Duckworth & Gross, 2014), *resilience* and *character* (Tough, 2012), *self efficacy*, (Bandura, 1997), a *growth mind set* (Dweck, 2008), *metacognition* (Zimmerman & Schunk, 2011), among others, or how to reframe what is being taught in ways that make it more relevant or interesting to students, as did Balfanz (The Charles A. Dana Center at the University of Texas at Austin and Agile Mind, Inc., n.d.) at John's Hopkins University, Triesman (The Charles A. Dana Center at the University of Texas at Austin and Agile Mind, Inc., n.d.) at the University of Texas, and Eccles and Wigfield (2002). Montessori, however, viewed learning as a part of development; as something innate in people that would naturally occur provided they were nurtured and supported in a developmentally appropriate environment. Such an environment would include effective learning materials and adults trained to recognize and foster the free expression of human tendencies. This presumed link between development and learning also relates to both Sanford and Perry, for whom "true education... was fundamentally... the evolution of individuals' thinking structures and meaning-making toward greater and more adaptive complexity" (King & Kitchner, 2002, p. 26).

Montessori perceived such outcomes to be natural human tendencies that would spontaneously emerge when people were in appropriate environments and these tendencies were not thwarted or deviated by intervention with the natural developmental process. To achieve such adaptation, Montessori theorized, the tendencies must be fulfilled; if they are not fulfilled, or are repressed, the individual will be maladjusted. These tendencies (which include Self Preservation, Gregariousness, Communication, Exploration, Classification, Order, Creative Imagination, Work, Coordination of Movements, Repetition, Curiosity, Reasoning and Calculation, Maximum Effort, Concentration, Self Control, Perfection, and Independence) appear to have much in

common with many of traits, characteristics, and mind-sets deemed emblematic of desirable learning outcomes.

Montessori further proposed that these tendencies were linked to the acquisition of specific abilities or skills during specific periods of development. If a person was not able to acquire a skill or ability during the sensitive period for its acquisition, the associated tendency would not be able to be fulfilled, and thus the person could not fully achieve her potential. If, however, skills and abilities were acquired and tendencies fulfilled in a timely way, individuals would be able to achieve maximum personal capacity and make their unique contributions to society. The post-Montessori students who participated in this study appear to be well on their way toward accomplishing this. It would be valuable further examine possible connections between the tendencies that, Montessori posited, emerge innately when individuals are in educational environments promoting optimal development and the characteristics and traits other educators focus on enhancing in order to promote educational excellence.

Summary

This exploratory qualitative study sought to discover characteristics and traits that post-Montessori undergraduate college students have in common as a springboard to further comparisons with students from traditional educational backgrounds. A further goal was to begin to discover what qualities present in post-Montessori individuals might be attributable to their Montessori education. The areas that were uncovered for further examination are elaborated below.

These post-Montessori students had relatively mature perspectives about knowledge and knowing, as they had begun to see knowledge as contextual and relative. They were also

developing empathy for others, yet were able to draw boundaries and stand up for themselves and their beliefs. They reported enjoying their college experience, especially when they had freedom of choice, could be self-directed and self motivated, and find opportunities to study areas that interested them in depth through hands-on, project-orientated activities. Many described aspects of their college experience in terms of experiences they had in their early Montessori environments.

The respondents also reported that they were developing their own system of values, and that they referred to those values when trying to make difficult decisions. They indicated that they were aware that their actions affected others and sought to make that effect a positive one. They valued their relationships with others and the opportunities to be exposed to multiple perspectives. The post-Montessori students reported that they were aware that they had changed their perspectives and way of thinking and knowing in the past, and anticipated that these could still change in the future, depending on their experience and understanding. They sought to find something that they loved doing to devote themselves to and that would make a contribution to society. They also reported they perceived that their Montessori experience had contributed to who they were, how they felt about themselves, how they learned, and how they thought about knowledge and knowing.

These findings suggest the possibility that there are positive long-term outcomes for individuals who experienced the Montessori approach in their earlier education. Outcomes that could help them become better able to cope with the increasingly complex questions that are a part of life in the twenty first century. The charter and public Montessori schools that are currently in operation could certainly be utilized as research sites so that ongoing studies of Montessori students could be implemented, building on the existing work of Lillard (2005, 2006)

and others. Additionally, new, experimental programs, such as the Montessori Family Community Centers (Black, Linares, & O'Shaughnessy, 2014), could be developed which could be researched as they are implemented.

Another fertile area for research would be investigation the characteristics identified by this study through other research and evaluative instruments to discover if there are correlations or causal connections between these traits and a Montessori education. Given the relative paucity of inquiry into Montessori student outcomes at this level of development, this area sorely needs to be addressed. Perhaps new instruments could be developed to better discover and identify if these characteristics develop naturally to individuals in Montessori environments, or if there are specific techniques or teaching tools which are implemented in Montessori environments that encourage this development. Possible connections between Montessori practices and the support of epistemological development could also be investigated, however additional means of measuring epistemological development may be necessary, as recommended by Schommer-Aikins (2002).

My Personal Learning

Doing this research study and writing the dissertation provided many opportunities for personal learning and growth of an academic, informational, professional, and personal nature. Certainly, any project of this length and size can be emotionally and intellectually taxing and challenging. In this particular study, I found opportunities for growth and even transformation in several areas.

Changes in understanding the methodology. I came to a much deeper understanding of what qualitative research entails, and gained some real insight into the role of the researcher as analyst. First of all, insightful interviewing is both an innate talent and a skill that can be

developed with practice. Although I have developed good communication and active listening skills over time, and have been quite successful in my experiences communicating with children and their families, I am certain that with more practice and experience with the techniques used to draw out rich experiential material, I would have been able to elicit more meaningful data for analysis.

Secondly, qualitative analysis is incredibly time consuming. It was necessary for me to become fully immersed in the data by rereading the transcripts many times and attempting to sort the participants' statements in a variety of ways. In the future, I think I will transcribe the interviews myself, as a way to really digest the information in a deeper way, which I think would help make the analysis richer, more valuable, and accurate. Just hearing the voices of the participants over and over might add another dimension to processing the data.

Thirdly, although it was easy to find patterns and connections amongst the statements of the different participants, it was challenging to put those patterns into meaningful categories and to recognize the overarching themes. I am still not certain that I have truly found all there was to discover from the interviews. I am not sure that all of the relevant themes have emerged. Were I better versed in these analysis techniques and more thoroughly steeped in constructivist development theory and adult learning, I might have been able to see more in the responses of the participants. I have a much greater appreciation for the amount of work and commitment it takes to be an effective qualitative researcher.

Changes in understanding of self. I discovered what a challenge it can be to balance home and family, work and professional commitments, and writing a dissertation. Although I felt I had found a reasonable balance while I was still engaged in course work, the solitude and uninterrupted focus necessary for the actual dissertation writing was a surprise for me. I

discovered that my typical “dive in and stay down until you have to come up for air” technique for conquering any challenge did not work as well in this circumstance. I had to learn to schedule time when I could just be alone with my thoughts, and not necessarily expect to produce anything tangible. I had to learn to be patient with myself, and to welcome the necessary revisiting, revising, rethinking, and rebuilding that seems to be an essential aspect of the qualitative research process. I also had to learn how and when to ask for help, and what kind of support I needed, not just from my Chair, but from my colleagues, friends, and family as well.

I was reminded that when I am stuck that I need to change focus, and do something large and physical, where I can see that I have made a concrete change in my environment. Somehow, rearranging the furniture, or building a dam across my backyard stream helps me rearrange the organization of my thoughts and words and build a better paper. Although I had thought of myself as able to focus and concentrate for long periods of time, it became clear that in this endeavor, it was necessary to intersperse periods of creating and writing with other activities, and to evaluate what type of task I could focus on at a particular moment, so that I could make the most out of the time I had available.

I also rediscovered the importance of meditative practices in the process of creating, evaluating, and reflecting on a problem. For me, it is important to clear my thoughts completely, to remove all importance and intensity from a task, so that the disparate elements that need to be juxtaposed can percolate on their own, below the surface of consciousness and then emerge in a more cogent way.

I think I would be more successful as a researcher if I worked as part of a team, or at least with a partner. Part of how I discover what I know, or the knowledge I am engaged in creating, is through communication with others. For me, knowledge is a construct that occurs between

people, and so I believe I need that interactive process to clarify and express what I am thinking. In this sense, I believe in the social constructivists' emphasis on "the importance of cultural practices, language, and other people, in bringing knowledge about" (Marton& Booth, 1997, p. 12).

Finally, I would like to mention what a privilege it was for me to speak with the post-Montessori students who were participants in this study. I was amazed at the sincerity and level of thoughtfulness and self-reflection they manifested as we conversed about their educational experiences and how they perceived those experiences had influenced them. It was gratifying to discover that these young adults appeared to be manifesting so many of the qualities that Montessori postulated would emerge in individuals, provided the proper environment was provided. I was encouraged to continue in the path of service to this process that has been the major focus of my time and energies for the past forty years, and spurred to find new ways of helping to discover and share the possible benefits we all might reap were we to be able to supply such environments to more students. Those of us who have spent our adult lives "in the trenches" to make our small contribution to education for peace and the evolution of humans as a more peaceful species should be encouraged by this apparent validation of our efforts.

This is the hope we have – a hope in a new humanity that will come from this new education, an education that is a collaboration of man and the universe, that is a help for evolution, for the incarnation of man. (Montessori, 1948, p. 14)

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Appendix A: Interview Questions

Interview Questions/Format

Preliminary Statement

Thank you so much for agreeing to participate in this study. I want to assure you that everything you share with me will be kept in strictest confidence, and will be used solely for research purposes. Your name and any other personal identifying details will be removed from the transcripts of this interview before any portion of it is quoted.

Please feel free not to answer any question, or to terminate this interview at any time. If you later decide that you do not want any information from this interview utilized, you may let me know at any time prior to the submission of my dissertation, which will be the end result of this research project.

Do you have any questions?

In order to fully utilize all that you are going to tell me, I would like to record this interview. Do I have your permission to do so?

Interview Protocol

(This is a combination of Perry interview questions and Montessori based inquiries.)

1. Can you tell me about your overall experience in college this year? What stands out for you about this year that has really made an impression on you? What overall sense do you make of your educational experience in college thus far?

(Possible probes: request examples, tie together threads of narrative, relate to earlier experience – especially in a Montessori setting – depends on participant)

- Who has been important to you? (peers, faculty/administrators, family, others)
- How have you changed the way you approach learning since you've been in college?
- How would you describe yourself...in general, and specifically as a learner?
- Are there any ways in which you are different than before as a result of your experience in college?
- What did you find helped/hindered you?
- What would you change?

2. When facing an uncertain situation, where you feel you don't have enough information, and/or the information is not clear cut, and/or there are contradictory pieces of information, how do you go about the process of making a judgment or decision about what you believe?

(Possible probes: request examples, relate to earlier experience – what did you do when you were younger in this kind of circumstance, what past examples might you draw on? – depends on participant)

- Is your decision right? Is there a right decision?
- How can you tell?
- Are there specific ideas or convictions that help you make these kinds of decisions?
- How did you come to have these beliefs? Are they ideas you have grown up with or have you developed this perspective over time?
- How do you feel if someone challenges your perspective or tries to convince you of an alternative one? What do you do?
- Have you ever wanted to convince others?

3. Does it seem to you that usually there is only one opinion, idea or answer that is really right or true, or do you think there can usually be more than one?

(Possible probes: request explanation, examples – depends on participant)

- Is this a new way of thinking for you, or have you felt this way for some time?
- What makes an opinion more or less right? Are all opinions right? Can some be better than others? What makes them so? What role do experts and authorities play?
- Is it important to obtain support for one's opinions? What kind? Why?

4. How would you define “knowledge”? How does it relate specifically to your experiences in college? to other settings/situations? What is the relationship between “knowledge” and your definition of “truth”?

(Possible probes: request examples, tie to past experiences/situations, in Montessori settings – depends on participant)

- What standards do you use for evaluating the truth of your beliefs or values? For evaluating those of others?
- Should your values and beliefs be applied to others? Why or why not?

Possible follow up probes in each area:

- How have you arrived at this particular view of these issues? Can you remember a time when you thought differently and recall how your view changed over time?
- To what extent do you think the view you have expressed is a logical and coherent perspective you've defined for yourself? What if any alternative perspectives have you considered?
- How likely is it that your view will change in the future? If you think it's likely to change, what kinds of experiences or situations might produce such change? Why do you think that? Have you experienced change in similar situations in the past?
- Ask for descriptions of specific examples of experiences.

Appendix B: Consent Materials

Written Consent Text

University Letterhead
Department of Education
Part 1: Research Description

Principal Researcher: Rebecca Keith

Research Title: _____

You are invited to participate in a research study that explores epistemological growth in former Montessori students by the end of their first year in college. Your participation in this study requires that you take an online survey that will take approximately 30-45 minutes to fill out. In addition, you may be requested to take part in a face to face or Skype interview process in which you will be asked questions about your college experiences this year and your ideas about knowledge and knowing. The duration of the interview will be approximately 1 and 1/2 hours. With your permission, the interview will be audio-taped and transcribed, the purpose thereof being to capture and maintain an accurate record of the discussion. Your name will not be used at all. On transcripts and data collected you will be referred to only by way of a pseudonym.

This study will be conducted by the researcher Rebecca Keith, a doctoral candidate at Saint Mary's College of California. The survey may be completed online between the dates of ___ and ___. If you are chosen to participate in the interview process, the interview will be undertaken at a time and location that is mutually suitable, including the possibility of using Skype technology.

Risks and Benefits:

The research will hopefully contribute to the understanding of the development of personal epistemology in former Montessori students and the possible influence of the Montessori experience on this process, which could influence improvement in primary and secondary education practice. Participation in this study could involve some emotional risks as it is possible that some of the questions and the reflections they engender could touch on emotionally sensitive areas for you, or cause you to remember uncomfortable situations that you might not wish to discuss. If this occurs, you may choose not to answer the question, or to terminate the interview and refuse to participate in the study. There is no financial remuneration for your participation in this study.

Data Storage to Protect Confidentiality:

Under no circumstances whatsoever will you be identified by name in the course of this research study, or in any publication thereof. Every effort will be made that all information provided by

you will be treated as strictly confidential. All data will be coded and securely stored, and will be used for professional purposes only

How the Results Will Be Used:

This research study is to be submitted in partial fulfillment of the requirements for the degree of Doctor of Education at Saint Mary’s College of California. The results of this study will be published as a dissertation. In addition, information may be used for educational purposes in professional presentation(s) and/or educational publication(s).

PART 2: Participant’s Rights

- I have read and discussed the research description with the researcher. I have had the opportunity to ask questions about the purposes and procedures regarding this study.
- My participation in this research is voluntary. I may refuse to participate or withdraw from participation at any time.
- The researcher may withdraw me from the research at her professional discretion.
- If, during the course of the study, significant new information that has been developed becomes available that may relate to my willingness to continue to participate, the investigator will provide this information to me.
- Any information derived from the research that personally identifies me will not be voluntarily released or disclosed without my separate consent, except as specifically required by law.
- If at any time I have any questions, I can contact the researcher, Rebecca Keith, who will answer my questions. The researchers email address is: Rebecca@oneworldmontessori.org. Her phone number is: (408) 723-5140. I may also contact the researcher’s faculty advisor, Kathleen Talyor, at:_____.
- If at any time I have comments or concerns regarding the conduct of the research, or questions about my rights as a research subject, I should contact Saint Mary’s College of California Institutional Review Board. The phone number for the IRB is: (925) 631-4072. The email address is: IRB@stmarys-ca.edu.
- I should receive a copy of the Research Description and this Participant’s Rights document.
- Audio taping is part of this research. Only the principal researcher and the members of the research team will have access to written and taped materials. Please check one:

- () I consent to be audio taped
- () I do NOT consent to being audio taped

My signature means that I agree to participate in this study.

Participants
signature:_____Date:_____

Name: (Please print)_____

Investigator's Verification of Explanation

I, Rebecca Keith, certify that I have carefully explained the purpose and nature of this research to _____ (participant's name). He/she has had the opportunity to discuss it with me in detail. I have answered all his/her questions and he/she provided the affirmative agreement to participate in this research.

Investigator's signature: _____ Date: _____

Appendix C: Cover Letter

Cover Letter

Dear Friend of Montessori,

My name is Rebecca Keith. I have been a Montessori guide for almost 40 years. I am currently Head of School at One World Montessori School and Head of The Maria Montessori Teacher Training Center, a MACTE accredited teacher training center in San Jose, California. I am currently doing research for my doctoral degree in Educational Leadership at Saint Mary's College of California, and I would greatly appreciate your assistance in recruiting potential participants for my study.

I am interested in exploring the epistemological development of former Montessori students who were co-creators of themselves in a Montessori prepared environment for a minimum of six years, as they complete their first year of college. The participants in this study would be initially asked to complete a survey called the Learning Environment Preference (LEP) on line. Some of them would also be asked to participate in an interview, either face to face or on Skype.

The data collected for this study could add to our understanding of how the Montessori Method, with its developmentally appropriate prepared environment and approach, supports and nurtures epistemological development.

If you know of any former Montessori students who meet these criteria, could you please have them contact me at: rebecca@oneworldmontessori.org. I would appreciate it if you could pass this request on to anyone else who might be able to help me identify qualified participants, and would encourage any former students you are able to contact to inform the former classmates about this study. The LEP survey is now on line and can be accessed as follows: click on <https://www.surveymonkey.com/s/lepmmms> or copy it and paste it in the browser window.

Thank you so much for considering my request. With your assistance, I will have the opportunity to expand our understanding of the potential benefits of a Montessori education.

Sincerely,

Rebecca Keith
Head of School, One World Montessori School
Director of Training, Maria Montessori Teacher Training Center
1170 Foxworthy Ave., San Jose, CA 95118
Rebecca@oneworldmontessori.org
(408) 723-514

Appendix D: Communications

Announcement for Recruiting Potential Participants

ATTENTION: REQUEST FOR ASSISTANCE IN RECRUITING POTENTIAL RESEARCH PARTICIPANTS

Head of School, Teacher Trainer, Montessori Guide with almost forty years of experience, and doctoral student is seeking former Montessori students with at least six years in a Montessori prepared environment who are currently in their first year of college for research on epistemological development. If you know of any former students who fulfill these criteria who would be willing to take a brief survey and perhaps participate in an interview please have them contact me at: rebecca@oneworldmontessori.org. Please feel free to contact me as well if you wish additional information about the research.

Letters to Participants/Potential Participants

Dear Potential Participant,

Thank you so much for your interest in furthering research about the possible effects of the Montessori Method of education. To participate in the initial survey, please click on the following link: <https://www.surveymonkey.com/s/lepmmms> or copy it and paste it in your browser window. That should take you directly to the survey. Please complete the survey as soon as you can, and forward this link to anyone who might also be able to participate. The more participants we can locate, the better! If you are willing to participate in an in person or Skype interview later in the spring, please make sure to submit the contact information requested at the end of the survey. If you encounter any difficulties with the survey, or have any questions, please feel free to contact me at: rebecca@oneworldmontessori.org .

Again, many thanks for your valuable contribution to Montessori research.

Warmly,

Rebecca

Rebecca Keith, Head of School and Teacher Training

One World Montessori School, Inc.

Maria Montessori Teacher Training Center

1170 Foxworthy Ave.

San Jose, CA 95118

(408) 723-5140

Dear Participant,

Thank you so much for your willingness to participate in this Montessori research project. If you have already submitted your survey, I appreciate your timely reply. If you have sent the link on to others, I am doubly grateful. If you have not yet participated or encouraged others, I urge you to consider doing so in the near future. I am continuing to keep the survey on line for another two weeks in the hope of attracting more participants.

To participate in the initial survey, please click on the following link:

<https://www.surveymonkey.com/s/lepmmms> or copy it and paste it in your browser window. That should take you directly to the survey. Please complete the survey as soon as you can, and forward this link to anyone who might also be able to participate. The more participants we can locate, the better! If you are willing to participate in an in person or Skype interview later in the spring, please make sure to submit the contact information requested at the end of the survey. If

you encounter any difficulties with the survey, or have any questions, please feel free to contact me at: rebecca@oneworldmontessori.org .

Again, many thanks for your valuable contribution to Montessori research.

Warmly,

Rebecca

Rebecca Keith, Head of School and Teacher Training

One World Montessori School, Inc.

Maria Montessori Teacher Training Center

1170 Foxworthy Ave.

San Jose, CA 95118

(408) 723-5140

Appendix E: Demographic Information

Table 2

Demographic Information and LEP Scores for All Respondents

Respondent ID	LEP Score	Gender	Ethnicity	Years in Montessori
1744916356*	390	F	Caucasian	IC, CH, LE, UE
1743611541	420	M	Kiwi	IC, CH, LE, UE
1740725832	429	F	Caucasian	CH, LE, UE
1717700435	368	F	White	IC, CH, LE, UE, JH
1709640145	283	M	White	IC, CH, LE, UE
1708953220	377	M	Filipino	IC, CH, LE, UE, JH
1707030248*	396	F	Caucasian	CH, LE, UE, JH
1706937700*	417	F	Caucasian	CH, LE, UE
1706877991*	412	F	Multi-race	CH, LE, UE, JH
1700775692*	386	M	White	CH, LE, UE
1700697697	425	F	Caucasian	LE, JH
1700467254	317	F	Caucasian	CH, LE, UE, JH
1699911919*	322	F	White	IC, CH, LE, UE
1699300885*	390	F	Caucasian	CH, LE, UE
1694396403*	414	M	Caucasian	CH, LE, UE
1693547719*	437	M	White	CH, LE, UE
1693542707	397	M	White	IC, CH, LE, UE
1693000545	343	F	White	LE, UE, JH

1692067463	443	F	White	CH, LE, UE
1691320692	370	F	White	IC, CH, LE, UE
1690957927*	434	F	White	CH, LE, UE, JH
1690791658	410	F	Caucasian	CH, LE, UE, JH, E/HS
1690317587*	443	F	Caucasian	CH, LE, UE
1689859022	390	F	White	IC, CH, LE, UE
1689814704*	393	F	White	LE, UE, JH, E/HS
1689725149*	410	F	Caucasian	CH, LE, UE, JH
1689616551	357	F	Spanish	IC, CH, LE, UE
1689571536	400	F	Caucasian	IC, CH, LE, UE

Note. * indicates participant in Skype interviews. IC= Infant community; ages 1-3, CH= Children's House, ages 3-6; LE= Lower Elementary, ages 6-9; UE= Upper Elementary, ages 9-12; JH= Junior High, ages 12-15; E/HS= Erdkinder/Farm School/High School, ages 15-18.

Appendix F: Data Reduction and Analysis

Initial Data Reduction and Analysis Process

Italics indicate “*in vivo*” categories. These included:

1. *Love of learning.*
2. Enjoying college.
3. *Responsible/independent learners.*
4. Peer interactions.
5. *In-depth learning.*
6. Personal standards/criteria.
7. *Conflict.*
8. *Competition.*
9. *Multiple perspectives.*
10. Empathy.
11. Ambiguity.
12. Space/environment.
13. Comparison of learning experiences.
14. *Freedom/choice.*
15. *Do what you love.*
16. *Being busy.*

To be considered a category, a perception needed to be held by at least four of the respondents, which eliminated the category “being busy”. I also created a category for data which seemed to be unique to each of the individual respondents, and might prove to be divergent. I then summarized each of the transcripts, and ran the summaries through a computer

program which provided a three dimensional visual perspective. I summarized the transcripts to remove the words I had spoken.

In the process of writing the narrative about the results, the category “self awareness” evolved, and “personal standards/criteria” became a subcategory of “responsible, independent learners”. Even later in the process, I discovered several new categories, *multiple modalities*, *knowledge is contextual*, *black and white vs gray*, and *knowledge is constructed by individuals*.

Themes that Emerged from the Data

In looking for more overarching themes, I tried various ways of combining the categories. Some appeared to relate primarily to identity, that is, how the respondents viewed themselves and their learning process; I called this Perception of Self. A second group referred more to their Relationships with Others. A third group focused on elements of the Learning Environment they had identified as important. The categories of *love of learning*, *responsible/independent learners*, *personal standards/criteria*, and *do what you love* fell into the theme of Perception of Self. *Peer interaction*, *conflict*, and *empathy* comprised Relationships with Others. *Space/environment*, *comparison of learning environments*, *in-depth learning*, *freedom/choice*, *competition*, and *enjoying college* described their perceptions about Learning Environment. Eventually *enjoying college* became a sub category of *comparison of learning environments*. *Multiple modalities* emerged as a new category within the theme of *Learning environments*. *Multiple perspectives* fit into both the *relationships with others* and the *elements of a learning environment* themes the data from that category was split between the two. The category *do what you love* changed to *self purpose*, and eventually became a theme of its own entitled *finding one's mission*. The three other new categories that emerged during the process of creating the narrative, *knowledge is contextual*, *black and white vs gray*, and *knowledge is*

constructed by individuals, became the theme Relationship to Knowledge. The following table, Table 3, shows the evolution from the initial categories into the five main themes.

Table 3
Evolution from Categories to Themes

Old Categories	Intermediate Change	Final Themes
Love of learning		Perception of Self
Responsible, independent learner		Perception of Self
Personal standards/criteria	Became a sub-category of Responsible, independent learner	
	Self awareness	Perception of Self
Being busy	Deleted as a category	
Ambiguity	Deleted as a category	
Do what you love	Self Purpose	Discovering One's Mission
Peer interaction		Relationships with Others
Conflict		Relationships with Others
Empathy		Relationships with Others
Multiple perspectives		Relationships with Others
		Learning Environment
Space/environment		Learning Environment
Comparison of learning environments		Learning

		Environment
Enjoying college	Became a subcategory of Comparison of learning environments	
In-depth learning		Learning Environment
Freedom/choice		Learning Environment
Competition		Learning Environment
	Multiple modalities	Learning Environment
	Knowledge is contextual	Relationship to Knowledge
	Black and white vs gray	Relationship to Knowledge
	Knowledge is constructed	Relationship to Knowledge

Appendix G: Student Responses

Student Responses Concerning the Influence of their Montessori Experiences

Helen:

I've been curious about stuff... as long as I can remember, but I started Montessori about the same time as I can remember, so, the Montessori is probably an influence. I definitely feel starting out in that Montessori environment allowed me to develop that learning style a lot more than a lot of other people I know. I know people who are the same kind of learners, but they don't seem to embrace it as much. Montessori is a huge impact on why I like to learn, 'cause I was allowed to learn when I was little. They just set you loose and said, "Go! Study! Learn things! Become more aware of the world."

I feel that environment has really fostered my ability to learn on my own and made me be interested in doing it on my own, so I was self-motivated, which is why I love doing things. As opposed to having someone say, "You have to do this, you have to do that". And it becomes a chore. Like, in high school, I sort of started to feel like learning was a chore. And, in the hard parts of college I sometimes feel that learning is a chore and it's something I have to do. But, then, when I get a chance to stop and think, I get a chance to realize, "Oh, yeah! I feel like learning! I remember learning can be fun".

I look back at Montessori and say, "Look! Learning can be fun!" I wish all school was like Montessori. I feel like it's a much nicer environment to learn in...I really enjoyed it and I definitely feel like it helped develop me more, as a person. You're given a chance to learn for yourself. So, you get a chance to think about things more...Conventional schooling doesn't add any teaching on who you are, whereas Montessori, well, doesn't explicitly say we develop who you are, they kind of do a little bit of a focus on that that I feel is missing.

Inez:

One of the biggest things that I really liked about it, especially when I got a bit older and saw like all the connections, was how much you were introduced to ideas when you are little and then understand those ideas more thoroughly when you are older. I think that's really symbolic of how knowledge or learning evolves throughout your life. You engage with an idea on one level when you're younger and then when you're older you engage with it more deeply. Montessori, I think, inherently teaches you to build on something you've already learned.

I guess the most obvious example that I can think of is completely unrelated, but in Kindergarten you play with little cubing blocks and you build them up and you take them apart and you try to put them back together. So, you're familiar with the relationships between the blocks from a very young age. And, then, in fourth and fifth grade you learn

about cubing and squaring and you take out the blocks, again, something you are very familiar with, and you add this new level of understanding to it. And I think Montessori does that with so many different things. You learn something really basic, like the Golden Rule, or something, in Kindergarten, and later you learn all these different complexities to it in trying to help you figure out how to respond to different situations. So I would definitely say it's accumulative.

My Montessori classroom set a really high standard and certainly taught me how to hold myself to a high standard. I feel like were I to sum up all of the things that I feel that I could trace back to Montessori; it would be being able to hold myself to a higher standard. I think that that is a pretty valuable lesson on what Montessori has to teach. My favorite part would be this kind of cumulative learning, as I was mentioning before, with math blocks and that type of things. You learned this very young and you keep coming back to it throughout your education in Montessori. I think that that's a really great comparison to have, why it is, when you think of something very young and you think coming back to it throughout and revising, depending on experiences, perspectives and contact with...I think about Montessori very, very fondly.

Kathy:

One of the things we were shown started out in the second grade. We'd write reports, like a report about a cheetah, you know, and we'd go to the animal book and turn to the page of the cheetah and then pretty much paraphrase what's written in the textbook. And that was fine for like 1st, 2nd, and 3rd grades. And then, there was a further requirement, you'd have to interview someone who knew about cheetahs, you'd have to find a secondary source, and that was slowly built up to where we had to use at least three different sources. We had to watch a documentary and we had to talk to someone...You'd have to go to a museum or you'd need to get an additional interview, if it was possible, with someone who lived during that event, or could give you that first perspective. Then, you had to read one book in favor of a topic and one book in opposition. Our teachers would constantly question us, what about this, and they would give us hypothetical questions.

Now I'm remembering, and I actually just reread this. In my first 7th grade seminar of American history, our teacher posed a question on the board that, throughout the year, we wrote about 5 or 6 essays on. The prompt was, "What does it mean to be an American"? ...You'd think it was a pretty basic question, but, it's not. There's so many different perspectives of it. When you think of America, you think of freedom, but it's so much more than that. What does it mean to be an actual American? And, to be forced to think about that like I sat down and like, "Oh. This is going to be easy. I'm just going to type this out." And then it was like, "No. It's much more complicated." And to see the progression; I re-wrote them a couple of years ago and see the progression of my essays and how much more complex they got as I thought about it more...You know, we'd re-read our essays in class and see what other people had to say, so that by the end of the class, we had some pretty long essays on what it meant, because there were so many new

things that we were thinking about because of what we had discussed... I think that's where that all came from...

The students were divided into pairs, and each pair was a decade. They had to put together a mini-museum display about their decade. They all had to choose an issue of that decade and write a paper on it. They had to find music of that era and find out what was important pop culture in that era, watch a documentary of an issue. It really made me realize that I haven't done a project like that in a long time. But, there's really no reason that if the group of 7th graders can do that, that we can't do it...

I didn't do anything like that in high school. It was very much, "Here, write a paper based on this textbook", but really it reminded me that there should be a greater expectation. I was held to a higher expectation probably in middle school than I am still today in my current classes, but there's no reason I shouldn't hold myself to a greater expectation than that.

And, and just in learning in general, we had a whole unit about water and we looked at the biology of water and like the compound of water. But, then we'd look at how it was used and what the issue of getting water to the rest of the earth and you know all of those things and you realize something as small as water has so many different angles you can approach it from, like if you make a bubble map... Um, I actually still make bubble maps so much when I'm writing papers because it really is important to not limit yourself before you start writing and get so honed in so that you *can* see there are all these other elements to this issue, even if it's just water, you know?

There was an engrained part of it in my education and an expectation of it. It's how I really like to look at learning and education. My mom always told me when I was a child that learning isn't just in the classroom, learning is a lifelong process and goal. You're always learning, no matter what you're doing. And, I think that mentality, tied into what I've learned about what *is* learning from schooling, has really, really changed my perspective... Because a lot of my peers definitely were like, "Okay, I'm done with the class. Like, that's it. I'm done learning" And it's like, "No! There's so much more!" There's so much more to it than just spending an hour every day in class about a subject.

Just one more thing, as far as learning goes, specifically with Montessori, is that our teachers really showed you what you could do as an individual. A big part of it, having mixed grades, was you were learning with other students. You could teach other students something, and you really realized that you had a self worth and value and learning community at a very young age, and having that understanding, I think, really helped promote my growth. An aspect of learning was that I was a valued contributor in the 1st grade.

Nathan:

One of the things I know was stressed and was important was critical thinking and problem-solving. I've read about things up here recently, because in my English class we

(studied) about schooling. We talked about Montessori schooling, and a big part of that is critical thinking. I think that that kind of thinking really helps me understand that different people have different opinions, and different people do things very differently from other people. You have different natural mindsets, and I think that is definitely a big part of that was Montessori helping me understand things better...I'd say Montessori prepared me more for, not the academics part, but the how to go about doing work. Montessori, in elementary, probably prepared me more for college than junior high and high school did, cause in junior high and high school I was at public school and again it was just sitting in rows and listening to lectures. But Montessori was huge on freedom. We got to do whatever we wanted, when now...we can do what we want whenever we want. It's not a rigid structure; it's a free thing, which I really, really like. I'm a fan of my Montessori background.

Debbie:

[In Montessori] you do a lot of things by yourself. You work at your own pace, and what's really nice about that, is you really grow; you make absolutely sure that when you're done at the end of the year you have grown as a student, and as a person goes, you have more knowledge. When I was in high school, there were some classes that I went out of and I thought, "Well, I don't feel like I've learned very much". Even right now, I'm thinking about all of the classes that I took, and the impact that they had on me, and things that I remember learning, and there was one class...where I really don't think I learned anything in it, and it's a little sad looking back on it. I'm trying to remember all these things and I don't remember *anything*, and I did really, really well in the class... I find that a little disturbing, that according to them, I did *so* good, but in terms of things that I got out of it, there was almost nothing, and that's just something that would never happen in Montessori. And, I don't think it would happen in college, either, because you really take classes that you need and that are gonna further you, further your learning and your education... I think it says a lot about Montessori, and I've never actually thought about that before and I think that's interesting.